FALCON three

DIGITAL AUDIO TV PROCESSOR

User Manual

TV SDI Audio Processor

(Rev. 1.7 ENG)

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1 INTRODUCTION

FALCON THREE VERSIONS AVAILABLE

ORDER N#	MODEL	DESCRIPTION
FALCON-THREE-TV-SDI	FALCON THREE TV SDI	3 Band Digital TV Audio Processor. It processes Analogue and Digital Audio signals and SDI Embedded Audio signals with internal decoding and recoding. Mono or Stereo Configuration. AGC, Loudness Control ITU-BS 1770, delay control, 10 Preset and 1 Preset Custom. Connectors: BNC, XLR, 1x TCP/IP, 3x Serial, GPin

OTHER FALCON THREE MODELS

ORDER N#	MODEL	DESCRIPTION
FALCON-THREE-TV	FALCON THREE TV	3 Band Digital TV Audio Processor. It processes Analogue and Digital Audio signals. Mono or Stereo Configuration. AGC, Loudness Control ITU-BS 1770, delay control, 10 Preset and 1 Preset Custom. Connectors: XLR, 1x TCP/IP, 3x Serial, GPin.

AVAILABLE OPTION FOR FALCON THREE MODELS

MODEL	DESCRIPTION
FTHREE-LAN	Lan Module to connect using a Ethernet port a Falcon Three to a WAN or LAN Network. Port is provided using a RJ45

1.1 USE OF THIS MANUAL

This manual is designed for the Falcon Three TV SDI.

2 SAFETY WARNINGS / ISTRUZIONI PER LA SICUREZZA

SAFETY WARNINGS

CONSIGNES DE SÉCURITÉ IMPORTANTES

ISTRUZIONI IMPORTANTI PER LA SICUREZZA

WICHTIGE SICHERHEITSHINWEISE

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

(Rel. 1.3)

2.1 FOREWORD

For your own safety and to avoid invalidation of the warranty all text marked with these Warning Symbols should be read carefully.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.

The manufacturer shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual, or through any mis-operation or fault in hardware contained in the product.

It is recommended that all maintenance and service on the product should be carried out by the manufacturer or its authorised agents. The manufacturer cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

3 SAFETY WARNINGS

The installation and servicing instructions in this manual are for use by qualified personnel only.

- **Read All Instructions.** All safety and operating instructions must be read before operating the product. They also must be retained for future reference, as it contains a number of useful hints for determining the best combination of equipment settings for Yr particular application.
- **Heed All Warnings**. All warnings on the product and those listed in the operating instructions must be adhered to.
- **Heat**. This product must be situated away from any heat sources such as radiators or other products (including power amplifiers or transmitters) that produce heat.
- **Power Sources.** This product must be operated from the type of power source indicated on the marking label and in the installation instructions. If you are not sure of the type of power supplied to your facility, consult your local power company. Make sure the AC main voltage corresponds to that indicated in the technical specifications. If a different voltage (ex. 110/115 VAC) is available, open the equipment closure and set the voltage switch on the main supply circuit, located behind the AC socket
- **Power Cord Protection.** Power supply cords must be routed so that they are not likely to be walked on nor pinched by items placed upon or against them. Pay particular attention to the cords at AC wall plugs and convenience receptacles, and at the point where the cord plugs into the product
- **Use only with a cart,** stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- **Lightning**. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the AC wall outlet and the audio connections. This will prevent damage to the product due to lightning and power line surges
- **Installation**. Configuration and installation should only be carried out by a competent installation engineer
- **Cabling**. Using high quality wires, well protected. Make sure the cable integrity.

This symbol alerts you to the presence of dangerous voltage inside the closure – voltage which may be sufficient to constitute a risk of shock. Do not perform any servicing other than that contained in the operating instructions. Refer all servicing to qualified personnel

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Do not change the voltage setting or replace the mains fuse without first turning the unit off and unplugging the mains cord

Make sure the AC main voltage corresponds to that indicated in the technical specifications.
THIS APPARATUS MUST BE EARTHED !

To avoid risk of fire use the correct value fuse, as indicated on the label stuck on the right side of the unit.

This apparatus uses a single pole mains switch and does therefore not separate the unit completely from the mains power. To completely separate from mains power (f.i. in the event of danger) unplug mains power cord. As the MAINS plug is the disconnect device, the disconnect device shall remain readily operable.

4 CONSIGNES DE SÉCURITÉ IMPORTANTES

- **Lire ces consignes**
- **Conserver ces consignes**
- **Observer tous les avertissements**
- **Suivre toutes les consignes**
- **Ne pas utiliser cet appareil à proximité de l'eau**
- **Ne pas obstruer les ouvertures de ventilatio**n. Installer en respectant les consignes du fabricant
- **Ne pas installer à proximité d'une source de chaleur** telle qu'un radiateur, une bouche de chaleur, un poêle ou d'autres appareils (dont les amplificateurs) produisant de la chaleur.
- **Ne pas annuler la sécurité de la fiche de terre**, la troisième branche est destinée à la sécurité. Si la fiche fournie ne s'adapte pas à la prise électrique, demander à un électricien de remplacer la prise hors normes.
- **Protéger le cordon d'alimentation** afin que personne ne marche dessus et que rien ne le pince, en particulier aux fiches, aux prises de courant et au point de sortie de l'appareil
- **Utiliser uniquement les accessoires spécifiés par le fabricant**
- **Utiliser uniquement avec un chariot**, un support ou une table spécifié par le fabricant ou vendu avec l'appareil. Si un chariot est utilisé, déplacer l'ensemble chariot–appareil avec précaution afin de ne pas le renverser, ce qui pourrait entraîner des blessures
- **Débrancher l'appareil** pendant les orages ou quand il ne sera pas utilisé pendant longtemps.
- **Confier toute réparation à du personnel qualifié.** Des réparations sont nécessaires si l'appareil est endommagé d'une façon quelconque, par exemple: cordon ou prise d'alimentation endommagé, liquide renversé ou objet tombé à l'intérieur de l'appareil, exposition de l'appareil à la pluie ou à l'humidité, appareil qui ne marche pas normalement ou que l'on a fait tomber.
- **NE PAS exposer cet appareil aux égouttures et aux éclaboussements**. Ne pas poser des objets contenant de l'eau, comme des vases, sur l'appareil

Ce symbole indique la présence d'une tension dangereuse dans l'appareil constituant un risque de choc électrique.

Ce symbole indique que la documentation fournie avec l'appareil contient des instructions d'utilisation et d'entretien importantes.

Avant de modifier le commutateur de changement de tension ou replacer le fusible il faut débrancher l'appareil de la prise électrique. Pendant son usage, l'appareil doit etre branchee à la prise de terre

Utiliser le fusible principal AC avec le valeur qui est indiquée sur l'étiquette collée sur le coffret.

Assurez-vous que la tension principale AC correspond à celle indiquée dans les spécifications techniques.

L'interrupteur d'alimentation interrompt un pôle du réseau d'alimentation excepté le conducteur de terre de protection. En cas de danger, debrancher le cordon d'alimentation. Parce que la prise du réseau de alimentation est utilisée comme dispositif de déconnexion, ce dispositif doit demeuré aisément accessible

5 ISTRUZIONI IMPORTANTI PER LA SICUREZZA

- **Leggere le presenti istruzioni**
- **Conservare queste istruzioni**
- **Osservare tutte le avvertenze**
- **Seguire scrupolosamente tutte le istruzioni**
- **Non usare questo apparecchio in prossimità di acqua**
- **Non ostruire alcuna apertura per il raffreddamento**. Installare l'apparecchio seguendo le istruzioni
- **Non installare l'apparecchio accanto a fonti di calore** quali radiatori, aperture per l'afflusso di aria calda, forni o altri apparecchi (amplificatori inclusi) che generino calore
- **Non rimuovere il terminale di connessione a terra sul cordone di alimentazione**: esso ha lo scopo di tutelare l'incolumità dell'utilizzatore. Se la spina in dotazione non si adatta alla presa di corrente, rivolgersi ad un elettricista per far eseguire le modifiche necessarie.
- **Evitare di calpestare il cavo di alimentazione o di comprimerlo**, specialmente in corrispondenza della spina e del punto di inserzione sull'apparato.
- **Utilizzare solo dispositivi di collegamento e gli accessori specificati dal produttore.**
- **Utilizzare l'apparecchio** solo con un carrello, un sostegno, una staffa o un tavolo di tipo specificato dal produttore o venduto insieme all'apparecchio. Se si utilizza un carrello, fare attenzione negli spostamenti per evitare infortuni causati da ribaltamenti del carrello stesso.
- **Scollegare l'apparecchio dalla presa di corrente** durante i temporali o quando inutilizzato a lungo
- **Per qualsiasi intervento**, rivolgersi a personale di assistenza qualificato. È' necessario intervenire sull'apparecchio ogniqualvolta si verificano danneggiamenti di qualsiasi natura. Ad esempio, la spina o il cavo di alimentazione sono danneggiati, è entrato liquido nell'apparecchio o sono caduti oggetti su di esso, l'apparecchio è stato esposto alla pioggia o all'umidità, non funziona normalmente o è caduto.
- **Non esporre a sgocciolamenti o spruzzi**. Non appoggiare sull'apparecchio oggetti pieni di liquidi, ad esempio vasi da fiori.

Questo simbolo indica la presenza di alta tensione all'interno dell'apparecchio, che comporta rischi di scossa elettrica.

Questo simbolo indica la presenza di istruzioni importanti per l'uso e la manutenzione nella documentazione in dotazione all'apparecchio.

Non sostituire il fusibile o cambiare la tensione di alimentazione senza aver prima scollegato il cordone di alimentazione. L'APPARATO DEVE ESSERE CONNESSO A TERRA.

Sostituire il fusibile generale con uno di identico valore, come indicato sulla etichetta applicata sul mobile dell'apparato

Assicurarsi che la tensione di rete corrisponda a quella per la quale è configurato l'apparecchio

Questo apparato utilizza un interruttore di alimentazione di tipo unipolare e l'isolamento dalla rete elettrica non è pertanto completo. Per ottenere un isolamento totale (ad esempio in caso di pericolo), scollegare il cordone di alimentazione. Inoltre, poichè la spina di alimentazione è utilizzata come dispositivo di sezionamento, essa deve restare facilmente raggiungibile

6 WICHTIGE SICHERHEITSHINWEISE

- **Diese Hinweise LESEN**
- **Diese Hinweise AUFHEBEN**
- **Alle Warnhinweise BEACHTEN**
- **Alle Anweisungen BEFOLGEN**
- **Dieses Gerät NICHT in der Nähe von Wasser verwenden**
- **KEINE Lüftungsöffnungen verdecken**. Gemäß den Anweisungen des Herstellers einbauen
- **Nicht in der Nähe von Wärmequellen**, wie Heizkörpern, Raumheizungen, Herden oder anderen Geräten (einschließlich Verstärkern) installieren, die Wärme erzeugen
- **Die Schutzfunktion des Schukosteckers NICHT umgehen**. Bei Steckern für die USA gibt es polarisierte Stecker, bei denen ein Leiter breiter als der andere ist; US-Stecker mit Erdung verfügen über einen dritten Schutzleiter. Bei diesen Steckerausführungen dient der breitere Leiter bzw. der Schutzleiter Ihrer Sicherheit. Wenn der mitgelieferte Stecker nicht in die Steckdose passt, einen Elektriker mit dem Austauschen der veralteten Steckdose beauftragen
- **VERHINDERN, dass das Netzkabel gequetscht oder darauf getreten wird**, insbesondere im Bereich der Stecker, Netzsteckdosen und an der Austrittsstelle vom Gerät
- N**UR das vom Hersteller angegebene Zubehör** und entsprechende Zusatzgeräte verwenden.
- **NUR in Verbindung** mit einem vom Hersteller angegebenen oder mit dem Gerät verkauften Transportwagen, Stand, Stativ, Träger oder Tisch verwenden. Wenn ein Transportwagen verwendet wird, beim Verschieben der Transportwagen-Geräte- Einheit vorsichtig vorgehen, um Verletzungen durch Umkippen
- **Das Netzkabel dieses Geräts** während Gewittern oder bei längeren Stillstandszeiten aus der Steckdose ABZIEHEN.
- **Alle Reparatur- und Wartungsarbeiten** von qualifiziertem Kundendienstpersonal DURCHFÜHREN LASSEN. Kundendienst ist erforderlich, wenn das Gerät auf irgendwelche Weise beschädigt wurde, z.B. wenn das Netzkabel oder der Netzstecker beschädigt wurden, wenn Flüssigkeiten in das Gerät verschüttet wurden oder Fremdkörper hineinfielen, wenn das Gerät Regen oder Feuchtigkeit ausgesetzt war, nicht normal funktioniert oder fallen gelassen wurde.
- **Dieses Gerät vor Tropf- und Spritzwasser SCHÜTZEN**. KEINE mit Wasser gefüllten Gegenstände wie zum Beispiel Vasen auf das Gerät STELLEN.

Dieses Symbol zeigt an, dass gefährliche Spannungswerte, die ein Stromschlagrisiko darstellen, innerhalb dieses Geräts auftreten.

Dieses Symbol zeigt an, dass das diesem Gerät beiliegende Handbuch wichtige Betriebs- und Wartungsanweisungen enthält.

Vor Änderung der Netzspannung oder Sicherungswechsel Netzkabel trennen.
Das Gerät muss für den Betrieb geerdet werden.

Hauptsicherung nur mit einer gleichwertigen austauschen
(s. entsprechende Etikette).

Vor Einschalten Netzspannungseinstellung am Gerät überprüfen bzw. anpassen.

Inpoliger Netzschalter. In Notfälle oder für Wartungsarbeiten Netzkabel trennen. Der Netzstecker fungiert auch als Trennelement muss deshalb zugänglich bleiben

7 INSTRUCCIONES IMPORTANTES DE SEGURIDAD

- **LEA estas instrucciones**
- **CONSERVE estas instrucciones**
- **PRESTE ATENCION a todas las advertencias.**
- **SIGA todas las instrucciones**
- **NO utilice este aparato cerca del agua**
- **NO obstruya ninguna de las aberturas de ventilación.** Instálese según lo indicado en las instrucciones del fabricante
- **No instale el aparato cerca de fuentes de calor** tales como radiadores, registros de calefacción, estufas u otros aparatos (incluyendo amplificadores) que produzcan calor
- **NO anule la función de seguridad del enchufe polarizado** o con clavija de puesta a tierra. Un enchufe polarizado tiene dos patas, una más ancha que la otra. Un enchufe con puesta a tierra tiene dos patas y una tercera clavija con puesta a tierra. La pata más ancha o la tercera clavija se proporciona para su seguridad. Si el toma corriente no es del tipo apropiado para el enchufe, consulte a un electricista para que sustituya el toma corriente de estilo anticuado
- **PROTEJA el cable eléctrico** para evitar que personas lo pisen o estrujen, particularmente en sus enchufes, en los toma corrientes y en el punto en el cual sale del aparato
- **UTILICE únicamente los accesorios especificados por el fabricante**
- **UTILICESE únicamente** con un carro, pedestal, escuadra o mesa del tipo especificado por el fabricante o vendido con el aparato. Si se usa un carro, el mismo debe moverse con sumo cuidado para evitar que se vuelque con el aparato
- **DESENCHUFE el aparato** durante las tormentas eléctricas, o si no va a ser utilizado por un lapso prolongado.
- **TODA reparación** debe ser llevada a cabo por técnicos calificados. El aparato requiere reparación si ha sufrido cualquier tipo de daño, incluyendo los daños al cordón o enchufe eléctrico, si se derrama líquido sobre el aparato o si caen objetos en su interior, si ha sido expuesto a la lluvia o la humedad, si no funciona de modo normal, o si se ha caído.
- **NO exponga** este aparato a chorros o salpicaduras de líquidos. NO coloque objetos llenos con líquido, tales como floreros, sobre el aparato .

Este símbolo indica que la unidad contiene niveles de voltaje peligrosos que representan un riesgo de choques eléctricos.

Este símbolo indica que la literatura que acompaña a esta unidad contiene instrucciones importantes de funcionamiento y mantenimiento.

Antes de cambiar la alimentacion de voltaje o de cambiar el fusible, desconecte el cable de alimentacion. Para reducir el riesgo de descargas electricas, esta unidad debe ser conectada a tierra.

Remplaze el fusible con lo mismo, que corresponde a lo indicado en el panel del equipo.

Antes de encender, controlar que la linea de alimentacion de voltaje corresponda a la indicada

El interruptor de alimentación es unipolar. En el caso de peligro, desconecte el cable de alimentación. Porque la clavija de conexion a red sirve por la desconection de la unidad, la clavija debe ser ubicada en proximidad de la unidad

8 UNPACKING AND INSPECTION

Your equipment was packed carefully at the factory in a container designed to protect the unit during shipment. Nevertheless, we recommend making a careful inspection of the shipping carton and the contents for any signs of physical damage.

Damage & Claims

If damage is evident, do not discard the container or packing material. Contact your carrier immediately to file a claim for damages. Customarily, the carrier requires you, the consignee, to make all damage claims. It will be helpful to retain the shipping documents and the waybill number.

Save all packing materials! If You should ever have to ship the unti (e.g. for servicing), it is best to ship it in the original carton with its packing materials because both the carton and packing material have been carefully designed to protect the unit.

Under normal conditions no user maintenance or calibration are required. Internal links and preset controls may be set to configure the unit during installation. **Any service work required should be carried out by qualified service personnel only.**
We are able to offer further product support through our worldwide network of approved dealers and service agents.

To help us provide the most efficient service please would you keep a record of the unit serial number, and date and place of purchase to be quoted in any communication regarding this product.

The actual equipment Serial Number is indicated on the silver label stuck on the rear panel of the equipment closure.

Tools And Equipment Needed

Only standard technician's tools are required to install this equipment.

9 FIRST INSTALLATION RECOMMENDATIONS

9.1 POWER SUPPLY CABLE

A power supply cable of approx. 2 mt length is supplied with the device, which has a moulded IEC plug attached – this is a legal requirement.
The type of plug for the power supply depends on the country in which it is delivered.

If for any reason, you need to use this appliance with a different plug, you should use the following wiring guidelines in replacing the exsisting plug with the new one:

Earth	Green, or green and yellow
Neutral (N)	Blue
Live (L)	Brown

Supply cables should be laid in such a manner that one does not step or walk on them. They should not be squashed by any objects.

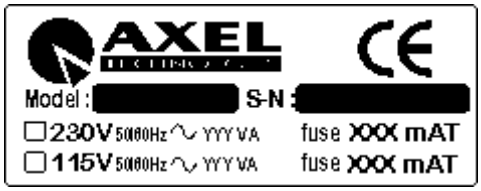
THIS EQUIPMENT MUST BE EARTHED.

The chassis is always connected to mains earth to ensure your safety: check your mains wiring and earthing before switching on.

9.2 AC MAINS VOLTAGE SETTING (230 V / 115 V)

BE SURE THAT THE UNIT IS SET TO THE CORRECT MAINS/LINE VOLTAGE FOR YOUR COUNTRY BEFORE PLUGGING IT INTO THE WALL OUTLET !

The actual Mains voltage is indicated on the label stuck on the equipment closure. Should the type of power at the operation location not be known, please contact your dealer or electricity company.



If, for some reason, the unit is to be operated at a mains input voltage which is different to that as supplied, you need to switch the voltage selector on the right side of the unit. You also need to replace the AC main fuse, according to information provided on the external label or on the Technical Specifications table at the end of this user manual.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, ALWAYS DISCONNECT THE AC MAINS CABLE BEFORE ALTERING THE CHANGE-OVER SWITCH. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

9.3 FUSE REPLACEMENT

The power supply socket has an integral fuse drawer containing the AC power fuse and a spare, both of the same value.

BEFORE REPLACING THE POWER FUSE, MAKE SURE YOU HAVE THE RIGHT TYPE OF FUSE FOR THE VOLTAGE TO BE PROTECTED.
USING WRONG FUSE TYPE WILL RESULT IN INSUFFICIENT PROTECTION.

Make sure that the power is switched off and the power cable is disconnected from the equipment.

a. Open the fuse drawer using a small blade screwdriver.

b. Replace the fuse located at the internal position

c. Push the fuse socket back into the original position (a.)

Perform the set-up under static control conditions. Static charges are likely to completely destroy one or more of the CMOS semiconductors employed in the unit. Static damage will not be covered under warranty.
Basic damage prevention consists of minimizing generation, discharging any accumulated static charge on your body and preventing that discharge from being sent to or through any electronic component.

Uninsulated dangerous voltage are inside the enclosure, voltage that may be sufficient to constitute a risk of shock.
Always disconnect to AC Mains before removing the top cover

9.4 PROTECTION AGAINST LIGHTNING

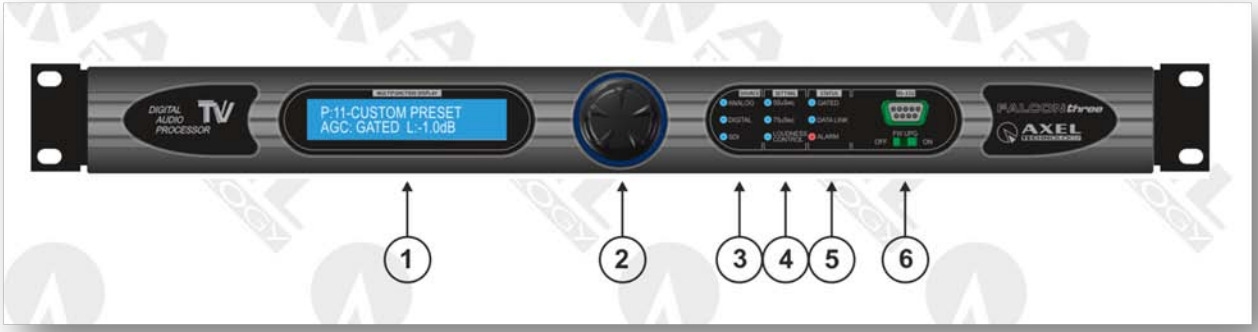
Should the device be put out of action due to being struck by lightning or excess voltage, disconnect it from the power supply without delay. Do not reconnect until the device has been checked. If in doubt contact the technical support service.

Make sure there is suitable lightning protection to protect the device.
Alternatively you should disconnect all connectors from the device during a storm or when the device is going to be unsupervised or not used for a longer period of time.
These measures will protect against damage by lightning or excess voltage.

9.5 VENTILATION

The equipment will operate as a free-standing unit without requiring any special cooling arrangement.
However, slots and openings in the product are provided for ventilation. They ensure reliable operation of the product, keeping it from overheating. These openings must not be blocked nor covered during operation.
YOU MUST LEAVE AT A MINIMUM ONE RACK UNIT OF EMPTY SPACE ABOVE THE EQUIPMENT TO ENHANCE VENTILATION AND TO GET A LONGER EQUIPMENT LIFE.

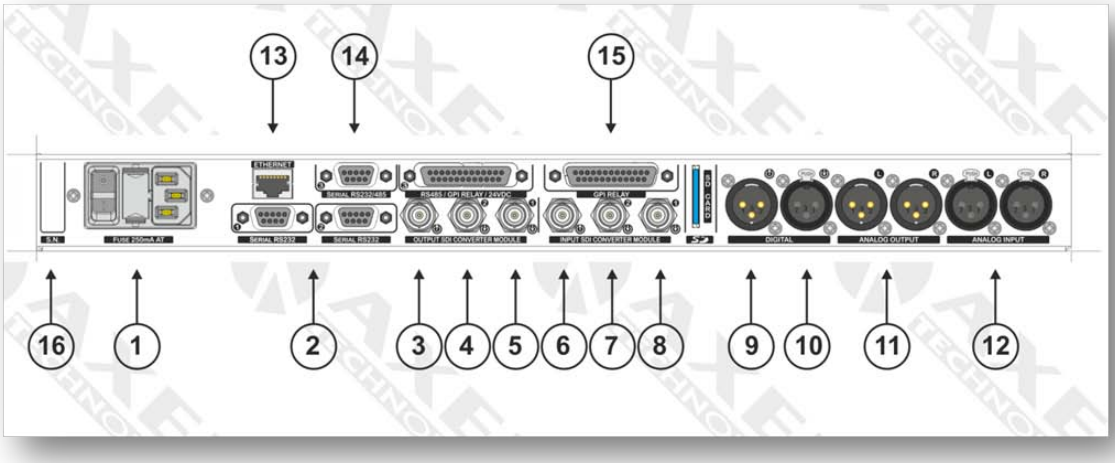
10 FALCON THREE TV SDI GENERAL DESCRIPTION



10.1 FRONT PANEL

N°	CONTROL NAME	FUNCTION
1	**DISPLAY**	Two-line LCD display that shows the status and mode of the Falcon Three TV SDI. It displays all the technical parameters for each menu.
2	**JOG SHUTTLE**	Knob (or *JogShuttle*) to access the various navigation menus and make changes. Press the JogShuttle to confirm selection.
3	**SOURCE**	LEDs visually show the input source from which the audio is taken for the Audio process. Options available: ANALOG, DIGITAL, SDI.
4	**SETTINGS**	LEDs visually indicate some of the operating parameters. On this panel, the options available are: pre-emphasis selected at 50 µS or 75 µS and whether or not the Loudness Control is active.
5	**STATUS**	LEDs visually indicate some of the operating conditions and statuses. The following statuses are available on this panel: “Gated”, “DATA LINK” and “ALARM”. For further information on operating conditions see the chapters below.
6	**RS-232 + FW UPG**	RS-232 Front Serial Port and Firmware Upgrade Switch. The Serial Port-1 available on the back panel is replicated on the front panel. *As this is a replication of the Serial POrt-1 avoid connecting two Serial Port-1 at the same time.* *Firmware Upgrade Switch (FW UPG)* This switch is used to prepare the device to a new Firmware upgrading or personalisation. When this switch is moved, the ALARM led flashes. For further information of updating the device see the chapters below and the technical appendixes.

10.2 REAR PANEL



N°	CONTROL NAME	FUNCTION
1	**POWER SUPPLY UNIT**	Switch with on/off light. The switch-power socket unit is fitted with a fuse drawer that contains the power supply fuse and a spare one with the same characteristics: 630 mA for 230V mains voltage.
2	**SERIAL PORT 1**	Falcon Three TV SDI provides up to 3 opto-isolated serial ports to control the device via remote control software. The "Axel Falcon Three Digital Audio Processors Remoter" can be used to change also the nominal audio levels and the port speed; the TAM (Target Address Manager) can be used to set or change the values of the TCP/IP card. Serial Port 1 can also be used to **reprogram the firmware** and to connect the device to an **external 56K analogue modem** (for remote control using the phone line). The Baud Rate can be set at 2400, 4800, 9600, 19200, 38400 Baud from the menu on the front panel. Serial port 1 (RS-232) is also featured on the front panel.
2	**SERIAL PORT 2**	Serial Port 2 is used to control and manage the Falcon Three SDI TV. The Baud Rate can be set at 2400, 4800, 9600, 19200, 38400 Baud from the menu on the front panel.
3	**OUTPUT SDI CONVERTER MODULE** (output)	This BNC is used to take the SDI digital television signal complete with Processed Audio using the Falcon Three TV SDI Audio processor (*Embedded Audio*) This is the main output of the SDI TV Video + Audio signal.
4	**OUTPUT SDI CONVERTER MODULE** (Backup input)	Secondary or Backup (bk) input of the Internal Re-Embedding module of the Falcon Three TV SDI Audio Processor. It is the secondary input ONLY for the SDI TV video signal. It is the secondary input of the Video Re-Embedding module with the audio just processed by the Falcon Three TV SDI. By default it is disconnected, but it is available.

5	**OUTPUT SDI CONVERTER MODULE** (Main input)	Main or Primary (main) input of the Internal Re-Embedding module of the Falcon Three TV SDI Audio Processor. This is the main input ONLY for the SDI TV video signal. Generally speaking, it is the main input of the Video Re-Embedding module with the audio just processed by the Falcon Three TV SDI. By default it is connected with a Jumper BNC-BNC cable to point 6 as this module Re-Embeds the SDI Video signal with the Audio from the audio processor. The audio signal is taken from the De-Embedding module; this is explained in detail in the points below.
6	**INPUT SDI CONVERTER MODULE** (output)	This BNC is used to take the SDI Digital Television signal without Embedded Audio, as the *"Input SDI Converter"* Module receives the SDI Digital television signal and De-Embeds it (i.e. separates the SDI TV signal and only takes the audio) and sends the De-Embedded audio signal to the Falcon Three TV SDI audio processor. By default, it is connected with a Jumper BNC-BNC cable to point 5 as this module De-Embeds the SDI Video signal with the Audio from the audio processor. The audio signal is taken from the De-Embedding module; this is explained in detail in the points below.
7	**INPUT SDI CONVERTER MODULE** (Backup input)	Secondary or Backup (bk) input of the Internal De-Embedding module of the Falcon Three TV SDI Audio Processor. This is the secondary input for the SDI TV video signal. It is the video secondary input of the De-Embedding module from the Falcon Three Audio signal. By default it is disconnected, but it is available
8	**INPUT SDI CONVERTER MODULE** (Main input)	Main or Primary (main) input of the Internal De-Embedding module of the Falcon Three TV SDI Audio Processor. This is the main input for the video SDI TV Video + Audio signal. It is the main input of the De-Embedding module to de-embed the Video signal from the Audio signal which will then be processed by Falcon Three TV SDI.
9	**DIGITAL OUTPUT**	Digital Audio Input and AES/EBU Digital Audio Output based on XLR Male, 110 Ohm impedance
10	**DIGITAL INPUT**	Digital Audio Input and AES/EBU Digital Audio Output based on XLR Female, 110 Ohm impedance
11	**ANALOGUE AUDIO OUTPUT**	Audio analogic Output based on XLR Male.
12	**ANALOGUE AUDIO INPUT**	Audio analogic Input based on XLR Female.
13	**ETHERNET PORT**	Falcon Three TV SDI is fitted with a Rj45 Ethernet port to monitor and control the device. This port can also be used to control the Web Browser.
14	**SERIAL PORT 3**	Serial Port 3 is used to control and manage the Falcon Three SDI TV. The Baud Rate can be set at 2400, 4800, 9600, 19200, 38400 Baud from the menu on the front panel.
15	**GPI RELAY**	Port available for future implementation; currently **NOT CONNECTED.**

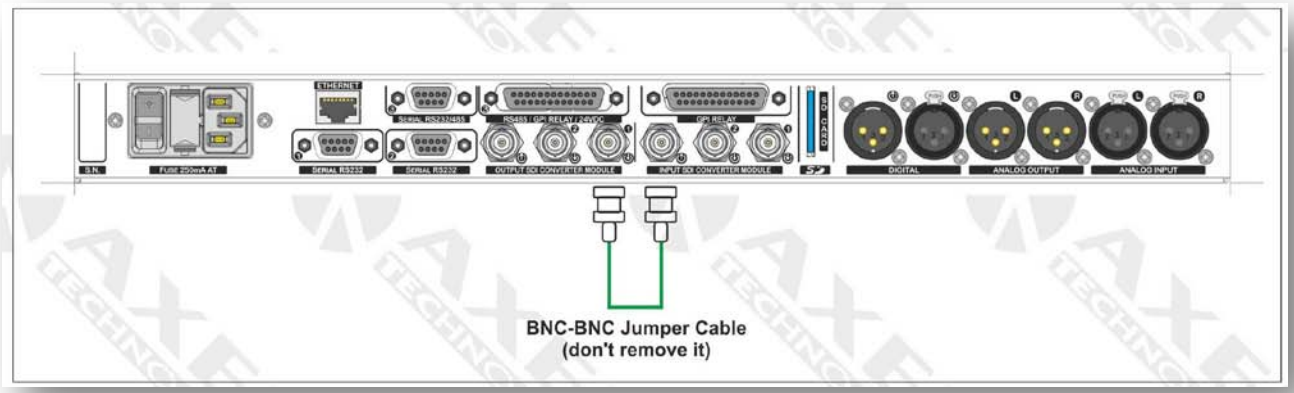
10.3 SETTAGGI E IMPOSTAZIONI DI DEFAULT

Falcon Three TV SDI use some “Default” settings. Reported below the main one:

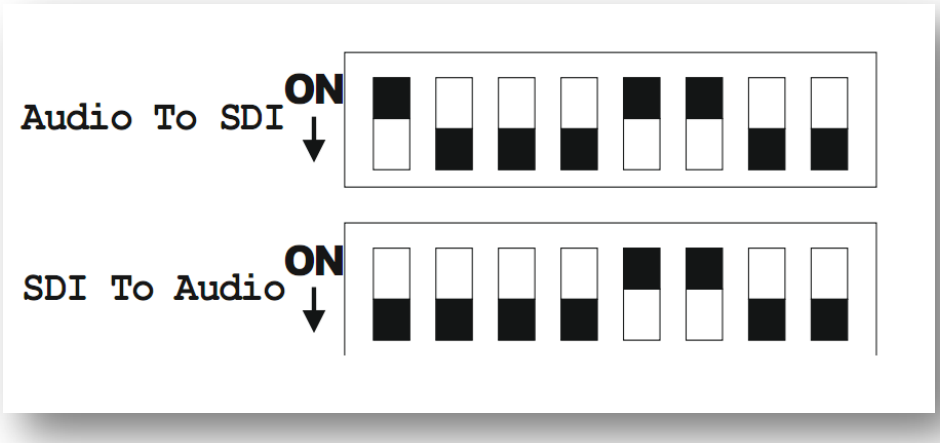
1. A Jumper Cable (BNC-BNC) from “Output SDI CONVERTER MODULE” to “Input SDI CONVERTER MODULE” Please, never remove it

2. In some hardware release it’s present a windows with some dip-switch, in the Falcon Three TV SDI right side, near the S/N Label. Please, don’t change the default settings

JUMPER CABLE (point 1)



SDI Converter (point 2)



11 FALCON THREE TV SDI REMOTER

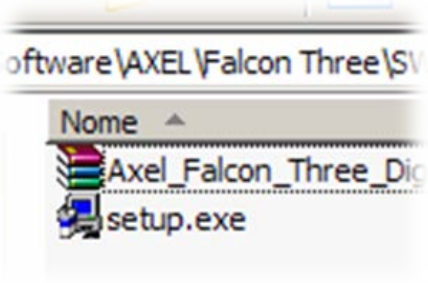
The installation procedure of the Falcon Three TV SDI control software is described below. The program runs on all Windows platforms including Windows 2000, Windows Xp sp3, Windows Vista and Windows 7 32bit. To install the program follow the instructions below using the program file from the original CD contained in the package with the Falcon Three SDI TV device.

Installation procedure:

1. Insert the CD in the player
2. Run SETUP.EXE

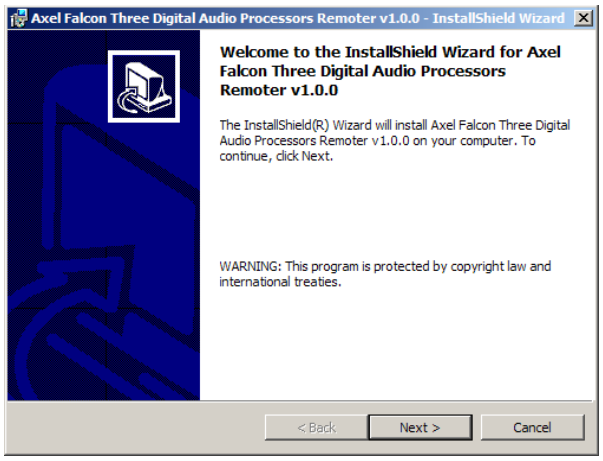
a. We recommend copying the program CD on the hard disk of the PC you are using and to run the program from the hard disk.

b. The following InstallShield Wizard page will appear

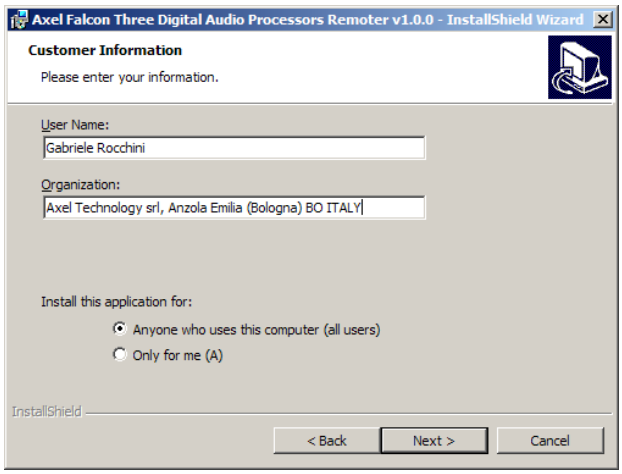


InstallShield Wizard
Axel Falcon Three Digital Audio Processors Remoter v1.0.0 Setup is preparing the InstallShield Wizard which will guide you through the program setup process. Please wait.
Checking Operating System Version
Cancel

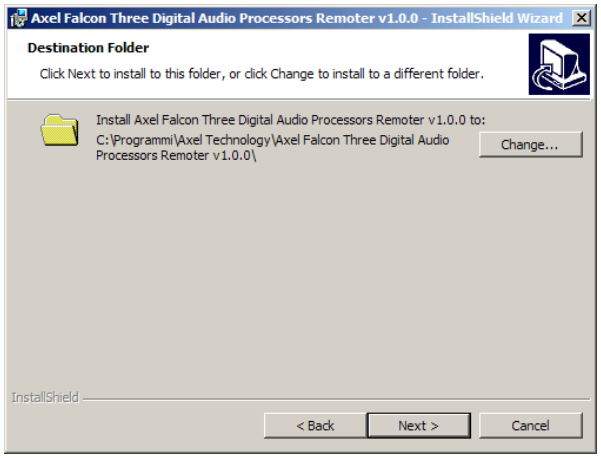
3. The following page will be displayed; click NEXT

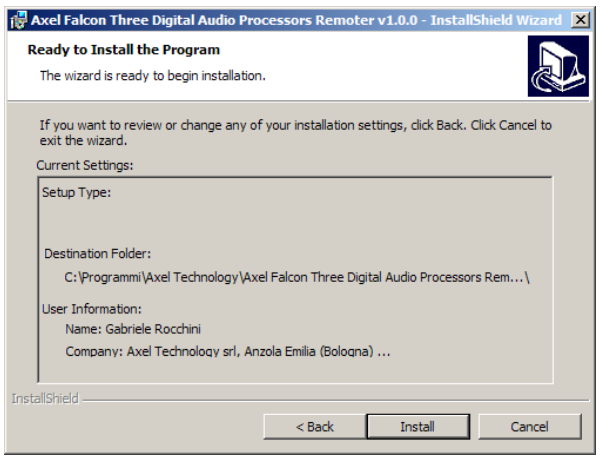

Axel Falcon Three Digital Audio Processors Remoter v1.0.0 - InstallShield Wizard
Welcome to the InstallShield Wizard for Axel Falcon Three Digital Audio Processors Remoter v1.0.0
The InstallShield(R) Wizard will install Axel Falcon Three Digital Audio Processors Remoter v1.0.0 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

4. Provide user information:

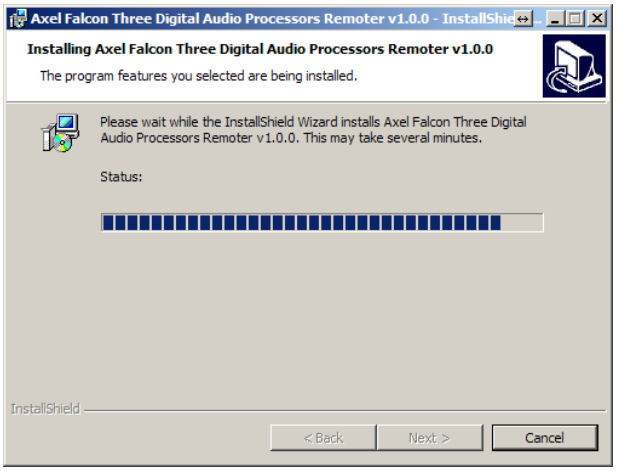


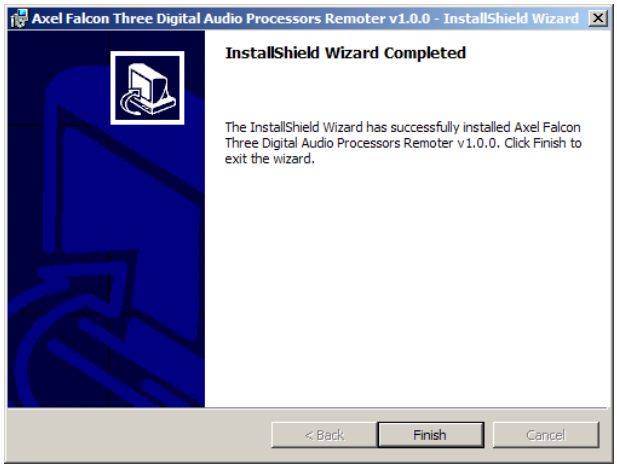
5. Select a destination folder or leave folder unchanged, click NEXT and then INSTALL


Axel Falcon Three Digital Audio Processors Remoter v1.0.0 - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Axel Falcon Three Digital Audio Processors Remoter v1.0.0 to:
C:\Programmi\Axel Technology\Axel Falcon Three Digital Audio Processors Remoter v1.0.0\
Change...
InstallShield
< Back
Next >
Cancel


Axel Falcon Three Digital Audio Processors Remoter v1.0.0 - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
Current Settings:
Setup Type:
Destination Folder:
C:\Programmi\Axel Technology\Axel Falcon Three Digital Audio Processors Rem...\
User Information:
Name: Gabriele Rocchini
Company: Axel Technology srl, Anzola Emilia (Bologna) ...
InstallShield
< Back
Install
Cancel

6. The software will start the installation of the program on the PC; when complete the following page will be displayed

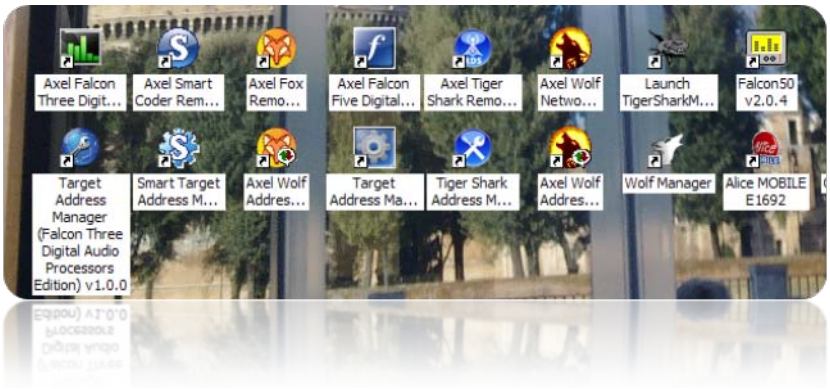

Axel Falcon Three Digital Audio Processors Remoter v1.0.0 - InstallShi
Installing Axel Falcon Three Digital Audio Processors Remoter v1.0.0
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs Axel Falcon Three Digital Audio Processors Remoter v1.0.0. This may take several minutes.
Status:
InstallShield
< Back
Next >
Cancel


Axel Falcon Three Digital Audio Processors Remoter v1.0.0 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Axel Falcon Three Digital Audio Processors Remoter v1.0.0. Click Finish to exit the wizard.
< Back
Finish
Cancel

7. Click FINISH to end the installations; two new icons with the Falcon Three SDI TV picture will appear on the desktop and in the program list. The two icons refer to the programs:

   a. *Axel Falcon Three Digital Audio Processors Remoter vx.x*

   b. *Target Address Manager (Falcon Three Digital Audio Processors Edition) v1.0.0*



8. At this point, the programs can be used to manage the Falcon Three SDI TV device.
   The following chapters describe the connection procedures and product potential.

12 USE OF THE TARGET ADDRESS MANAGER SOFTWARE

The Target Address Manager software assigns a TCP/IP address, a Subnet Mask, a Gateway and a port to the Falcon Three TV SDI. This is done by using the serial port of the PC on which the Target Address Manager is installed and the **Serial 1** port of the FALCON THREE TV SDI device. The following screen will appear when you open the program:

Target Address Manager [Falcon Three] - v1.0.0
Com Port : COM3
CONNECT
IP Address : 000 . 000 . 000 . 000
Subnet Mask : 000 . 000 . 000 . 000
Gateway : 000 . 000 . 000 . 000
Port : 10000
Welcome to Target Address Edit Manager for Three Bands Digital Audio Processors.
Please check if Connection Parameters are the same of the Target and then click 'Connect' to Link.
If connection is successful Red Led will turn ON.
SEND DATA
RELOAD DATA
EXIT

The Target Address Manager is still disconnected from the Falcon Three TV SDI device, in fact the values of the Ethernet port are still grey. Click CONNECT to connect the PC to the Falcon Three TV SDI; the Ethernet port values will show on the Target Address Manager of the Falcon Three TV SDI. The default values of the COM port are:

38.400bps 8-N-1

Once the Target Address Manager has been connected to the Falcon Three TV SDI, the COM PORT becomes grey again; the Ethernet port values are displayed. To change these values position the cursor in the relevant fields and enter the port data, then click SEND DATA to send the changes to the Falcon Three TV SDI. To check whether the changes have been made click RELOAD DATA, which refreshes the program which then reads the port values again.

Target Address Manager [Falcon Three] - v1.0.0
Com Port : COM3
CONNECT
IP Address : 192 . 168 . 099 . 082
Subnet Mask : 255 . 255 . 255 . 000
Gateway : 000 . 000 . 000 . 000
Port : 10000
Connected Target: Three Bands TV Processor v1.0.2
FW Number: 50XW4KE4A0F5M
Now you can change Target values by editing fields and clicking 'Send Data'.
When you have finished, choose 'Quit'.
SEND DATA
RELOAD DATA
EXIT

On the lower part of the software, above the command keys, information concerning the device connected is available. Data such as the “Connected Target” is available; this shows the device model connected and the firmware release installed (v1.0.2). The Firmware Number is also shown, which indicates the univocal progressive number of the Firmware installed on the device. This number could be required for an upgrade of the device or in the case of specific requirements.

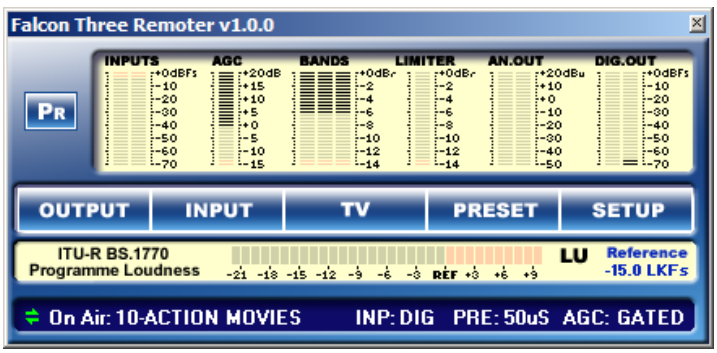
13 USE OF THE FALCON THREE REMOTER SOFTWARE

Start window of the Falcon Three TV SDI

13.1 ACCESS VIA SERIAL CONNECTION

11 To work on the Falcon Three TV SDI, after having allocated the Port and TCP/IP values it is necessary to use the Falcon Three REMOTER program by clicking the special icon. The window below shows the connection via Rs232 serial port to the Falcon Three TV SDI. As can be seen, a Serial connection is being used on the COM3 port of the PC in use. The serial connection is the fastest one to set up; connect the Pin-to-Pin serial cable supplied in the Falcon Three TV SDI box and click CONNECT; the control panel for the management of the device will appear. For a TCP/IP connection see the next chapter.

Click CONNECT to establish a communication between the software and the device; all the information present on the Falcon Three TV SDI will be displayed including the status and operating mode of the device. The control panel will change format and display all the necessary controls to operate the device. The various controls are explained in detail in the next chapters.



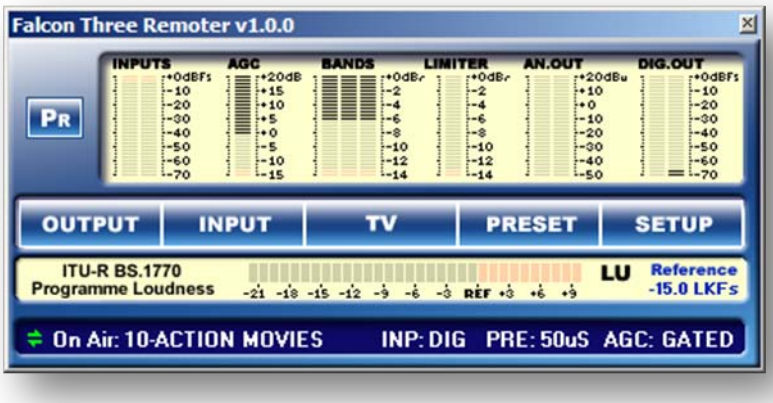
13.2 ACCESS VIA TCP/IP CONNECTION

To access and manage the device via TCP/IP follow the simple instructions below. Unlike a serial connection, a TCP/IP connection is extremely useful when one or more units must be managed at different points of the audio chain. In this way it is possible to connect to Falcon Three devices and manage each one in remote mode from one single point.

Click the "*Choose Tcp/Ip*" connection key and enter the TCP/IP address and port value previously assigned using Target Address Manager in the IP box. Then click Connect on the bottom right of the control panel; the connection with the Falcon Three TV SDI will be established via Ethernet. On the right of the connection panel there is the "*Last 10 Items*" box.

This dropdown menu displays and makes available the last ten connection to Falcon Three TV SDI devices. By clicking on the relevant connection, the connection values are shown in the IP box and made available for the connection.

Once the Connect key has been pressed, the control panel of the Falcon Three TV SDI is as shown in the figure. All the controls offered by the device are made available and changes can be made.

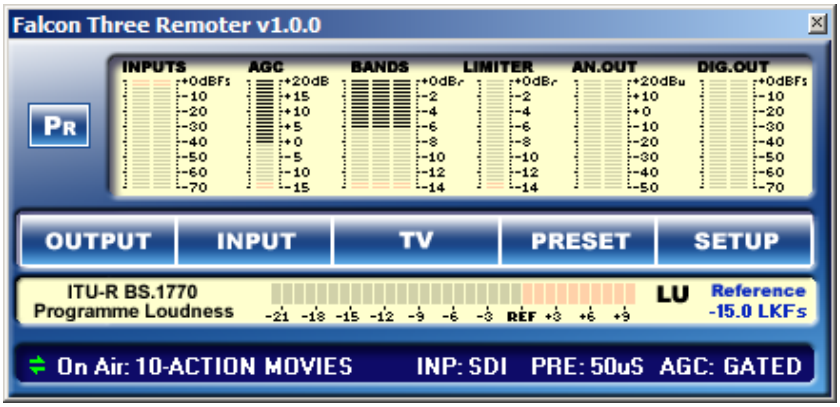


As for the Rs232 Serial connection to disconnect the device enter the *SETUP* window and click

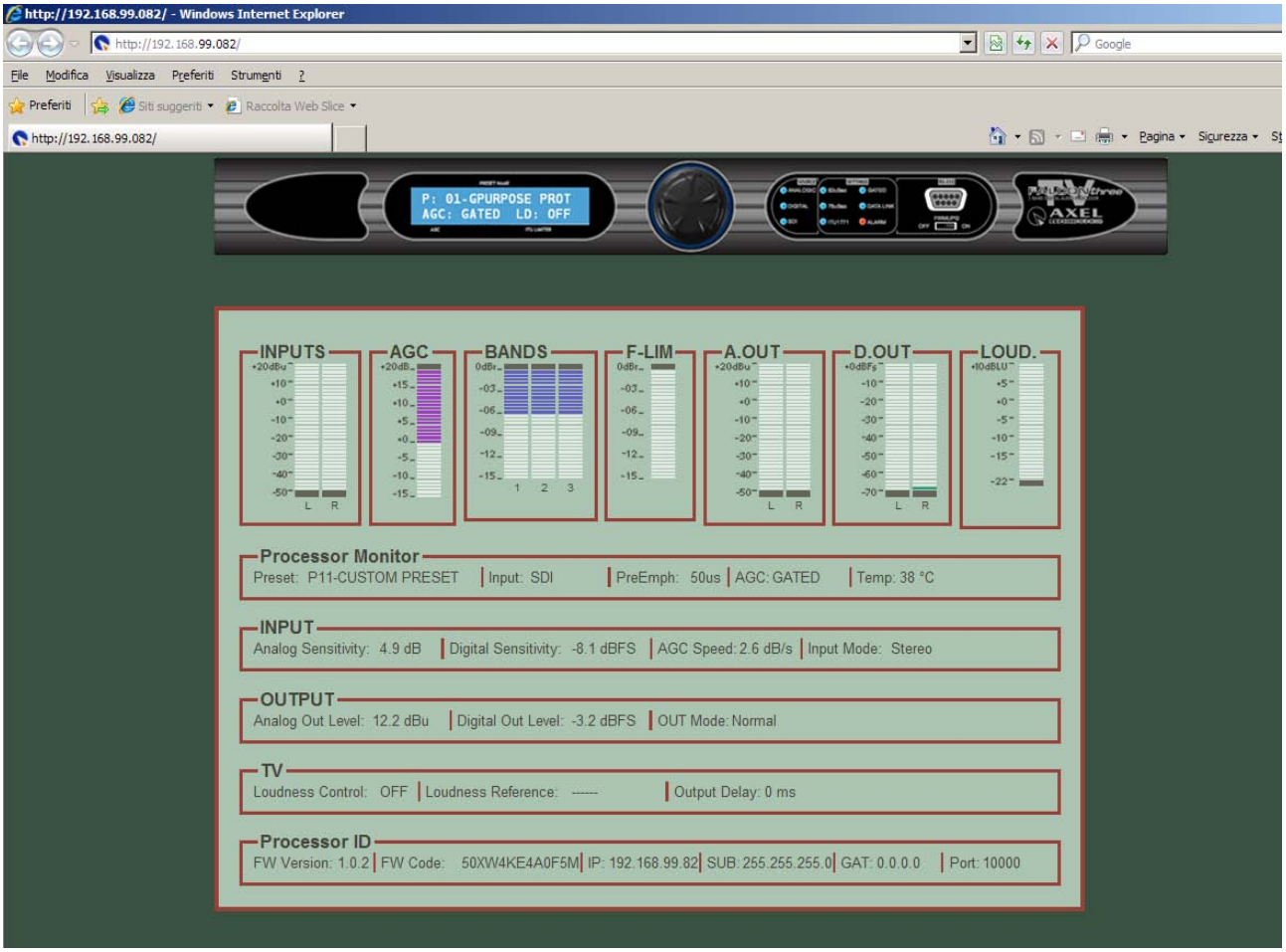
N.B. Falcon Three TV SDI features a special plug-in thanks to which it complies with the recommendations of the ITU-R BS.1770 standard.

14 FALCON THREE TV SDI MANAGEMENT

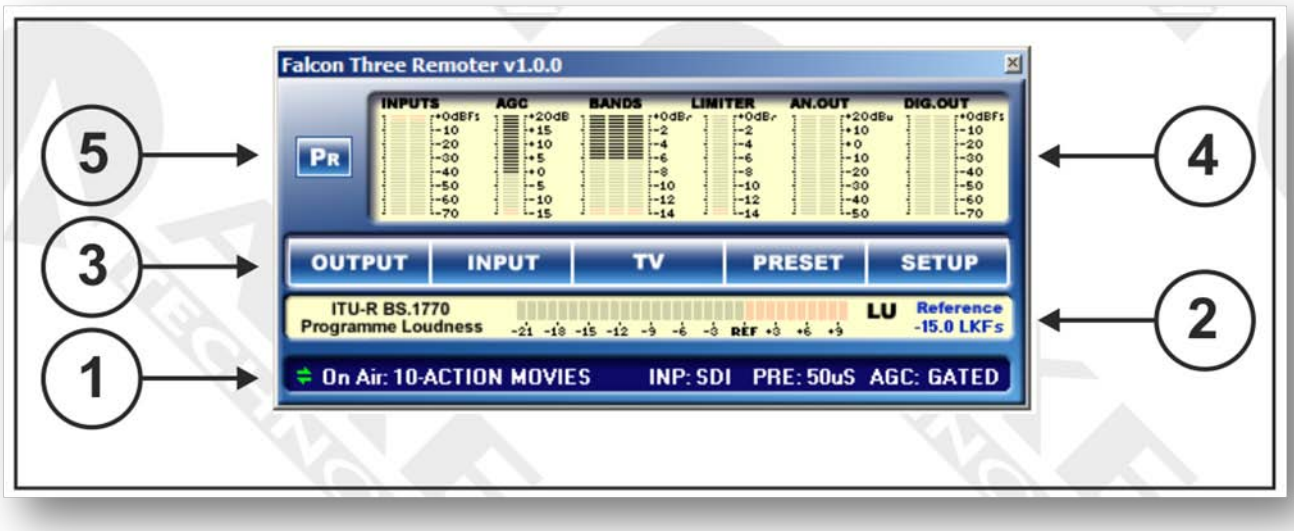
As previously mentioned the Falcon Three Remoter is a program to manage and control the Falcon Three TV SDI both locally (via serial connection) and remotely via TCP/IP. A Web Server is also available inside the machine to display data via Web browser. Once you have accessed the Falcon Three TV SDI device, the following screen will appear:



Using the Web Browser the following screen will appear:



15 FALCON THREE TV SDI REMOTER



15.1.1 FALCON THREE TV SDI CONTROL SOFTWARE DESCRIPTION

N	FUNCTION	DESCRIPTION
1	Section - ***OnAir*** - ***Input*** - ***Pre*** - ***AGC***	This section displays a part of the machine status; it displays some Falcon Three TV SDI operating parameters such as the on air Preset (*OnAIR*), Audio processor input (*INP*), Pre Emphasis (*PRE*) level and the status of the automatic gain control (*AGC*)
2	Section - ***Programme Loudness***	This section displays the Loudness level introduced and or corrected by the Falcon Three TV SDI.
3	Section (Navigation Bar) - ***OUTPUT*** - ***INPUT*** - ***TV*** - ***PRESET*** - ***SETUP***	In this section, it is possible to display and manage most of the Falcon Three TV SDI parameters. From here it is possible to manage the *OUTPUT* and *INPUT* modes, the television parameters (*TV*), change the sound timbre by modifying the *PRESET,* and manage the device by means of the *SETUP*
4	Section - ***LEVELS***	This section shows the operating levels of the device, in particular the following levels: input, AGC, 3 band compressor, analogue output and digital output. When the *SDI* or *Digital* input is selected, as the signals are of a digital nature, the measurement unit and full scale changes to

		0dBFs; when the analogue input is selected, the measurement unit and full scale is of +20dBm
5	Section - ***Pr***	This key is used to access and send on air one of the 10Preset + 1 Custom.

15.1.2 OPERATING CONTROLS OF THE FALCON THREE TV SDI

15.1.3 OUTPUT SECTION DESCRIPTION

Click **OUTPUT** to enter the menu of the audio processor output:

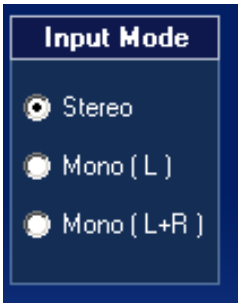
Output Mode*:* operating mode of the Falcon Three TV SDI. The options available are *Normal*, *Ref.Tone* and *Bypass.*

Normal*:* When this mode is selected, the Falcon Three TV SDI works as Audio processor and all its potential is exploited. This is the normal operating mode once installed.

Ref. Tone**:** Click this option to enable the emission of a **533 Hz** Test tone on the analogue and digital output. The frequency is fixed and can be used as sample tone to carry out tests and measurements. The output level can be selected, in fact it is strictly related to the Audio Output Level and Digital Audio Level which can be varied from a minimum of -9.0 dBm to +15.0 dBm for Analogue audio, and from -25.0 dBFs to -1.0 dBFs for the Digital output.

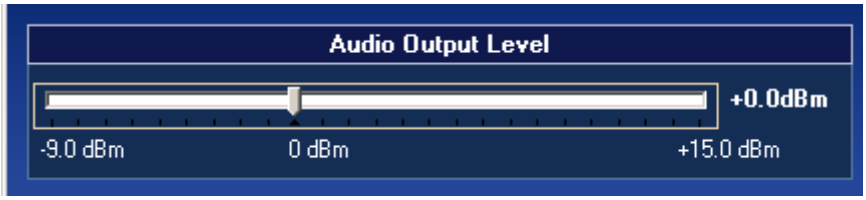
Bypass: Select this mode to disconnect the audio process (Digital Audio Processor) of the Falcon Three TV SDI. The device becomes transparent in relation to inputs. This mode is important in order to hear directly the changes introduced by the 3 Band Digital Audio Processor.

Pre-Emphasis: The mode and amount of pre-emphasis to apply to the signal in the 3 band Digital Audio Processor of the Falcon Three TV SDI. The values available are Off, 50 µS and 75 µS.



***Input Mode*:** Input mode of the 3 band Digital Audio Processor of the Falcon Three TV SDI. The options available are Stereo, Mono L and Mono L+R. Stereo is intended as an audio process on two channels, left and right, while Mono L is the generation of an audio signal on both left and Right outputs but it is only taken from the Left channel. In the Mono L+R operating mode, the Falcon Three TV SDI generates a MONO output signal summing the LEFT and RIGHT channels (true Mono). The MONO output signal is reproduced in exactly the same way on both the LEFT and RIGHT channels.

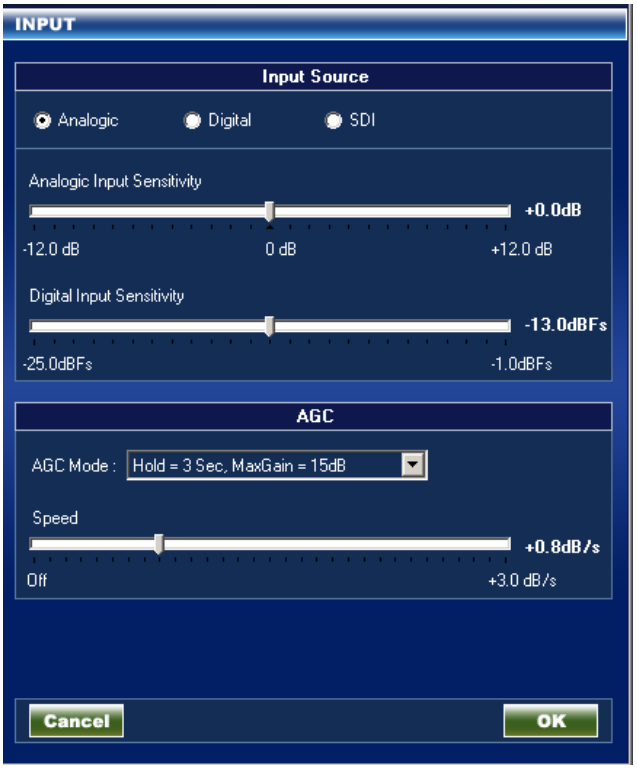
Audio Output Level: analogue output level of the Falcon Three TV SDI. The values can be set from -9.0 dBm to +15.0 dBm.



Digital Output Level: AES/EBU digital output level of the Falcon Three TV SDI. The values can be set from -25.0 dBFs to +1.0 dBFs.

15.1.4 INPUT SECTION DESCRIPTION

Click **INPUT** to enter the menu of the audio processor input; two controls are available 2, Input Source and AGC:



Input Source: Input Source is the point to which the input source of the Falcon Three TV SDI digital audio processor is connected. The options available are **Analog**, **Digital** and **SDI** (Serial Digital Interface).

Analogic Input Sensitivity: this is used to adjust the input sensitivity of the analogue audio of the Falcon Three TV SDI. Range of allowed values: from -12.0 dBu to +12.0 dBu. Each step is of 0.1 dBu.

Digital Input Sensitivity: this is used to adjust the input sensitivity of the digital audio of the Falcon Three TV SDI. Range of allowed values: from -25.0 dBFs to +1.0 dBFs. Each step is of 0.1 dBFs.

15.1.5 FALCON THREE TV SDI INPUTS AND OUTPUTS and HARDWARE BYPASS

One of the features of the Falcon Five TV SDI is to make available the input audio also on an output different from the one already assigned and in use. The analogue audio (Left+Right) can therefore be taken from the analogue output even if the input signal is SDI. The internal de-embedding module makes the audio available for both the internal audio processor (Digital Audio Processor) and the XLR pins on the rear panel. The AES/EBU Digital Audio signal can also be taken if the input signal is SDI or Analog. The audio signal to be embedded in the video signal can also be changed by selecting an analogue or digital input and leaving the SDI video signal.

When one of the three inputs is selected, the other is mutually and automatically disconnected.The **Hardware Audio Fault Bypass** however remains valid for all the inputs towards the outputs; in the case of fault of the device it completely bypasses all the inputs on the respective outputs, thus making the device transparent to any process without interrupting the audio chain.

15.1.6 AGC MODE

Use the **AGC Mode** to select fixed combinations of the following parameters of the AGC system: MaxGain (maximum amplification value), Hold (AGC hold time before intervention). The **Hold** parameter is used to define the waiting time before the AGC is activated when the level of the input signal varies. Hold = 0 means that the system acts immediately while Hold = 2 means that the automatic level compensation process waits 2 seconds before starting.

For example if the **AGC Speed** is set at 2 dB/sec and the input signal is lowered by 6 dB, the compensation process will be completed after exactly 3 seconds (6/2) if the Hold time is 0 seconds and after exactly 6 seconds (3 + 6/2) is the Hold time is of 3 seconds. We recommend the use of Hold=0Sec (Mode 2) for music sources and Hold=3Sec (Mode 5) for microphone sources (i.e. “voice”).

The **MaxGain** (Maximum Gain) parameter sets the maximum amplification value that the AGC system can offer. For example by setting Mode 2, the maximum amplification is +12dB: this means that a -12 dB signal will be taken to 0 dB while a -15 signal will be taken to - 3 dB.

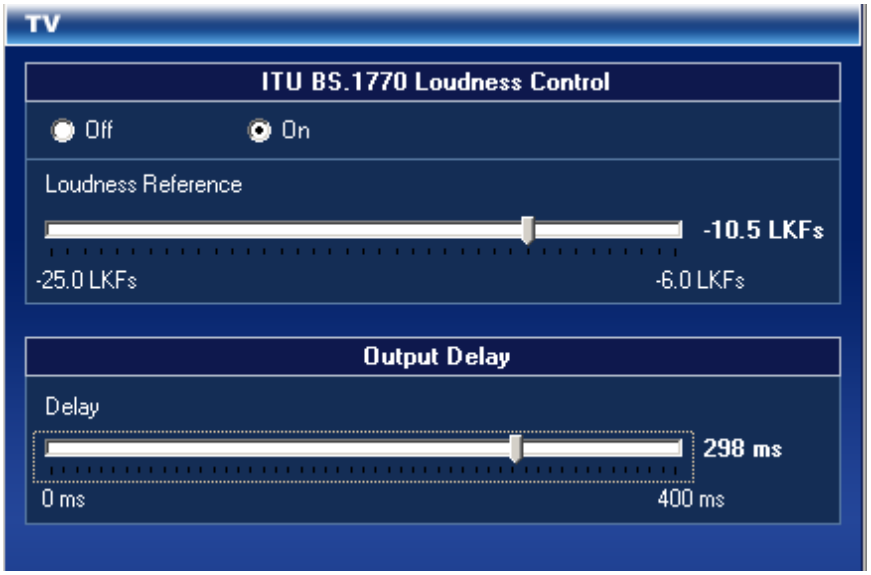
Identify this function in the **Input** menu then select one of the following options (the parameters mentioned above cannot in fact be singularly selected and changed but only using the following fixed combinations):

Hold	Maximum Gain	Gate Threshold
Hold=0Sec	MaxG=+08dB	Gate=-18dB
Hold=1Sec	MaxG=+10dB	Gate=-18dB
Hold=0Sec	MaxG=+12dB	Gate=-18dB
Hold=2Sec	MaxG=+12dB	Gate=-24dB
Hold=3Sec	MaxG=+15dB	Gate=-24dB
Hold=3Sec	MaxG=+20dB	Gate=-24dB
Hold=0Sec	MaxG=+15dB	Gate=-24dB

We suggest a MaxGain configuration with a medium value (*not more than +12 dB*, as this value can be sufficient to vary the levels between the various musical passages as in the case of classical music); we suggest a Hold parameter of 0 if the music flow is discontinuous and the immediate intervention of the AGC is required, while a high value (3 or 4) is recommended if blank intervals are required during the emission (speech pauses, line switch between studios, etc.).

15.1.7 TV SECTION DESCRIPTION

In the TV section of the Falcon Three TV SDI it is possible to set certain parameters such as the ITU-R BS 1770 standardised Loudness control and the Output Delay. The controls are described in detail in the next paragraphs.



15.1.8 ITU –R BS 1770 Loudness Control

Use this parameter to control the Loudness introduced and corrected by the Falcon Three TV SDI processor. Use the Off and On selector to activate or bypass the Loudness control. The variations are displayed in the control panel by the software.

The ITU-R BS 1770 standard concerns the perceived sound level pressure in broadcasting and limits it to the medium levels established by the broadcaster. This level is 60dBA and represents a typical television audio level in a domestic situation. In the ITU-R BS 1770 this level corresponds to a frequency of 1Khz; the standard also provides the algorithms to calculate the average values integrated with time. The processor is programmed by entering the loudness reference, expressed in LKFs , that is the maximum dynamic peak allowed by the system at which the signal must be set (on average).

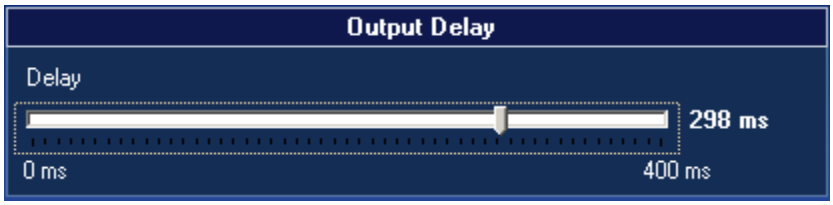
With this reference the processor will assume that at a [OutputLevel – Loudness Reference] level the television of reference will generate a 60dBa audio level. The typical LKFS values range from -12LKFS to -18LKFS and are the dynamic head room available before reaching the audio peak.

For example if the system works with the maximum level of -9dBFs and the system must generate 60dBA at -24dBFs, the Loudness Reference must be set at -15LKFS and the Output level at -9dBFs.

If everything is correctly set, by introducing a tone at 1Khz at whatever level, after a few seconds an audio level of 60 dBA should be measured at the output of the television system of reference.

15.1.9 OUTPUT DELAY

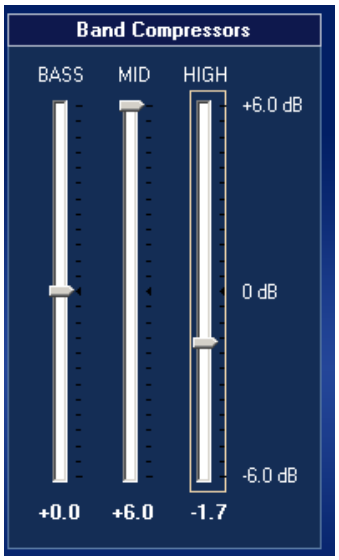
The Output Delay is the delay introduced by the Falcon Three TV SDI audio processor according to the input signal. This delay is useful when the Audio and Video signals are out of synch, i.e. when the audio reproduced is not in synchrony with the video transmitted.



This is very easy to perceive with speech, when the lip movement does not correspond with the words spoken and heard. The correction can range from a minimum of 0 ms to a maximum of 400 ms.

15.1.10 PRESET SECTION DESCRIPTION

In the Preset section it is possible to modify an existing preset and/or create a new one with footprint details defined by the user according to individual requirements.



BAND COMPRESSOR: this control defines the amount of compression of each band from a minimum of – 6.0 dB to a maximum of + 6.0 dB

COMPRESSOR RELEASE: the Compressor Release value is the time expressed in dB/s (decibels per second), that the compressor takes to end the processing of the audio material in the processor
This control works in the opposite way to the AGC.

(Final) Limiter Drive: This control acts directly on the final stage of the processor and makes it possible to add gain before the final process. This control should be used with great care to avoid big variations in the audio level and create unpleasant "pumping" of the audio material in the processor.

Band Coupling: The band coupling control communicates to the Falcon Three TV SDI audio processor unit the operating mode of the Audio Compressor. In this case, a number of controls are grouped in a few simple operating modes.
The compression modes are LOW (LESS PROTECTIVE) – MID (NORMAL) – HIGH (MORE PROTECTIVE). The PROTECTIVE mode is not a particularly emphasised compression; in this mode the sound is practically natural. In MID (NORMAL), the parameters for the compression of the audio material in the processor are increased maintaining however a certain balance between the compression details. The LOW (LESS PROTECTIVE) function entails strong compression. The LOW (LESS PROTECTIVE) function is usually selected to strongly pump audio material that does NOT have many contents or details, such as a continuous musical content like heavy metal or hard rock music, and in all the situations in which the audio material introduced in the processor is very complex.

15.1.11 SETUP (PROGRAM SETTINGS)

In this part it is possible to manage all the optional functions of the Falcon Three TV SDI. A summary of the functions and connection data of the device are also available. It is also possible to lock the front panel and disconnect the device.

Windows Setup: The "Always On Top" checkbox offers the possibility of keeping the control software always at the forefront.

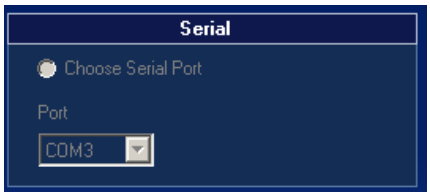
TCP/IP: This panel shows a summary of the connections between the Falcon Three TV SDI device and the management and control software. In the picture at the side, it is possible to see the TCP/IP connection, the address and the port being used, plus the last ten connections (last 10 items).

Program Information and Messages: This panel provides a summary of the Falcon Three TV SDI model in use, the name of the device, the firmware version installed on the DSP of the device and the univocal firmware code assigned to each single device and the version of the Software being used.

Lock Front Panel Keyboard: this control is used to lock the front panel of the Falcon Three TV SDI. To lock the front panel enter a code of at least one digit and click LOCK. To unlock it enter the code and click UNLOCK.

When the front panel is locked (lock code + LOCK), the parameters cannot be changed from the front panel.

To unlock the front panel enter the code and click UNLOCK.



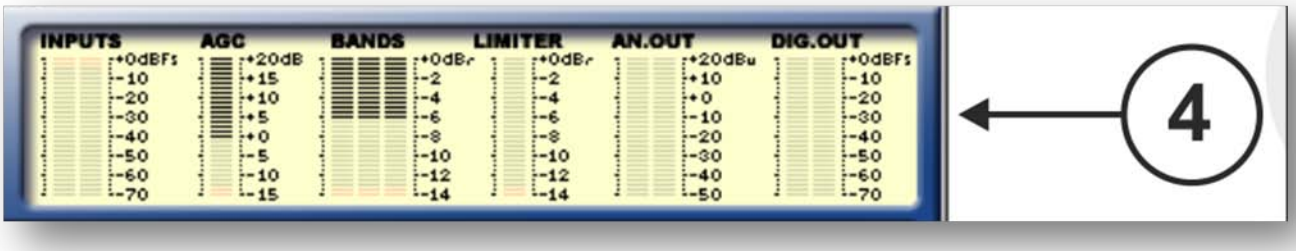
SERIAL: the serial control is used to set, in the control software, which serial port to use to communicate with the Falcon Three TV SDI. The ports available in the software are taken directly by the operating system. The default configuration parameters are:

38.400bps 8 – N – 1

This control disconnects the device from the control software

OK saves the configurations and changes made.

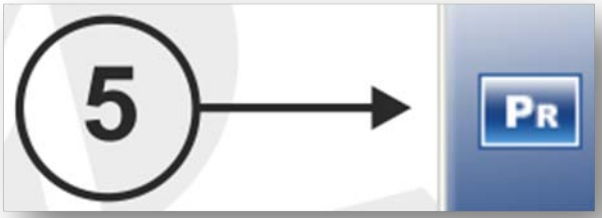
16 “LEVEL” PANEL DESCRIPTION



The figure above shows the operating level panel of the Falcon Three TV SDI. In particular the following levels are shown:

Name	Description	Notes
INPUTS	Input level of the audio source	*The maximum level applicable for a digital input, AES/EBU or SD, is of 0dBFs, while for an Analogue input the maximum measurable level is of +20dBu. The numbering changes when the type of input is selected.*
AGC	Amount of Automatic Gain Control	
BANDS	Amount of compression in dB for each single band	
LIMITER	As for the bands it shows the level of action of the Limiter	
AN. OUT	Level of the analogue output	*Always available even when the digital/SDI input source is selected*
DIG.OUT	Level of the digital output	*Always available even when the analogue input source is selected*

17 "Pr" SECTION DESCRIPTION

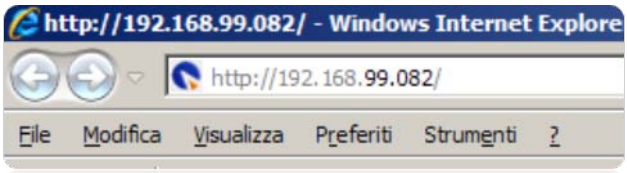


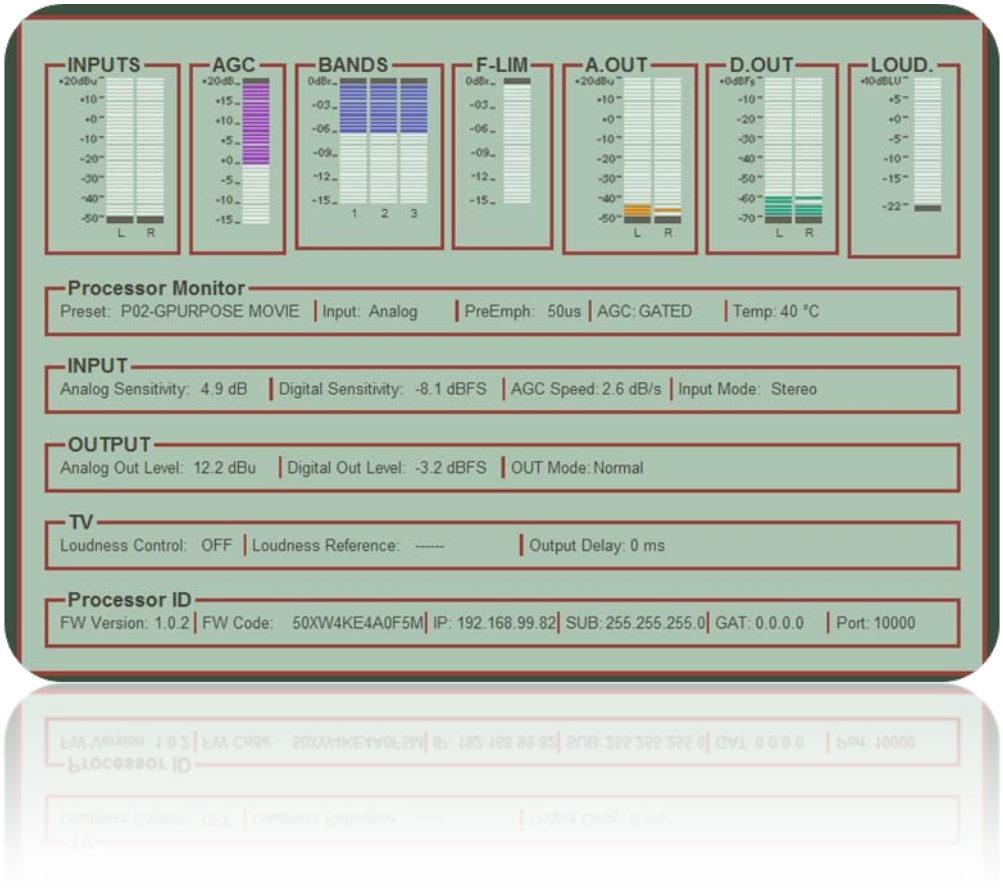
The **Pr** key on the Falcon Three Remoter shows the presets with which the audio processor can operate. There are 10 presets available plus 1, the number 11 which is available for the user. The table below lists the Presets and the recommended use of each Preset.
Note: When the Preset key is clicked on the Remoter, the preset is immediately sent “on air” therefore it is important to be very careful when changing the Preset. The change of Preset is confirmed without clicking the OK key!

Preset N°	*Name*	*Applications*
1	**GPURPOSE PROT**	Preset General purpose: a rather flat response suitable in all situations typical of television entertainment programmes; the dynamic range is always controlled in a soft and slow way.
2	**GPURPOSE MOVIE**	General Purpose Preset particularly for Movies. Suitable for all applications. Good processor response typically required in action films.
3	**GPURPOSE NEWS**	General Purpose preset particularly for voice. Suitable for all application but with a slightly medium-high response on the voice bands.
4	**GPURPOSE MUSIC**	General purpose Preset with Loudness type response. Suitable for music and video entertainment programmes.
5	**GPURPOSE TALK**	Similar to preset 3, but with more emphasis on the medium frequencies.
6	**GPURPOSE SPORT**	General purpose preset, but with slow response suitable to the sound pauses in sports programmes.
7	**MUSIC ENHANCED**	Preset with strong accent on Loudness, suitable for pop music and video entertainment programmes.
8	**MUSIC CONTROL**	Preset suitable for classical music.
9	**OLD MOVIES**	Preset with slow response and attenuation of high frequencies. Suitable for old movies with noisy audio track.
10	**ACTION MOVIES**	Preset with fast response and compressed bass frequency. Suitable action films with great dynamic range.
11	**CUSTOM PRESET**	To be defined and saved by the user

18 FALCON THREE TV SDI WEBSERVER

The operating status of the Falcon Three TV SDI can be checked from any web browser. Whether the device is connected to the computer via switch or crossover cable simply enter the TCP/IP address of the processor or processors connected in the navigation bar to visualise the web control page. This page shows the STATUS of the machine by displaying the In/Out levels and the compression introduced for each band in relation to the audio processor input. The machine cannot be controlled using the web browser; the levels of reference or the preset behaviour cannot be changed. This page offers however useful information such as the audio processor monitor, the various In/Out levels, processor data and the temperature inside the machine. The default port for the control via http is the :80 while the default port for the control of the device via Remoter software is 10000. Check that the firewall and network structure allow for the passage of the packets via these ports.



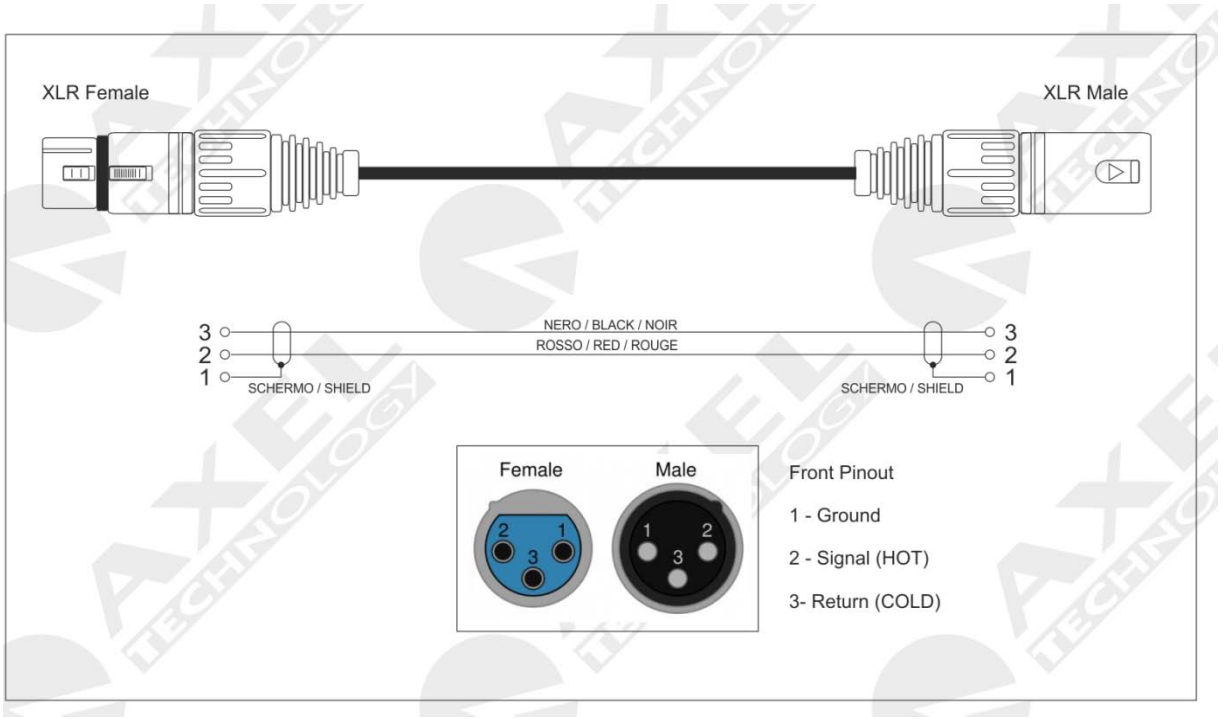

INPUTS
AGC
BANDS
F-LIM
A.OUT
D.OUT
LOUD.
Processor Monitor
Preset: P02-GPURPOSE MOVIE | Input: Analog | PreEmph: 50us | AGC: GATED | Temp: 40 °C
INPUT
Analog Sensitivity: 4.9 dB | Digital Sensitivity: -8.1 dBFS | AGC Speed: 2.6 dB/s | Input Mode: Stereo
OUTPUT
Analog Out Level: 12.2 dBu | Digital Out Level: -3.2 dBFS | OUT Mode: Normal
TV
Loudness Control: OFF | Loudness Reference: ----- | Output Delay: 0 ms
Processor ID
FW Version: 1.0.2 | FW Code: 50XW4KE4A0F5M | IP: 192.168.99.82 | SUB: 255.255.255.0 | GAT: 0.0.0.0 | Port: 10000

19 TECHNICAL APPENDIX

This section provides all the technical explanations, and the connection Pin Outs to and from the Falcon Three TV SDI. Always refer to this technical appendix for connections and connection procedures. In case of differences between the documentation below and the hardware device please contact Axel Technology at the numbers and e-mail addresses shown at the end of this manual. Our technical and assistance department will be pleased to help you!

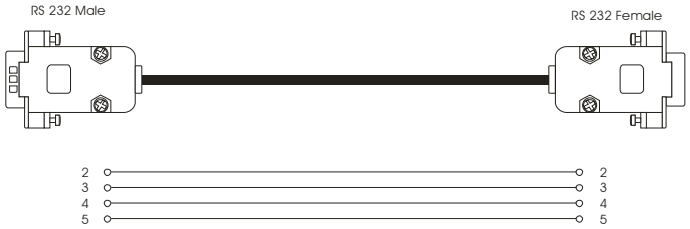
19.1 APPENDIX A – BALANCED AUDIO CONNECTION AND PINOUT

Balanced Audio connection diagram with balanced XLR for **Analogue** audio **input** and **output** (Left+Right) and AES/EBU digital audio **input** and **output**.



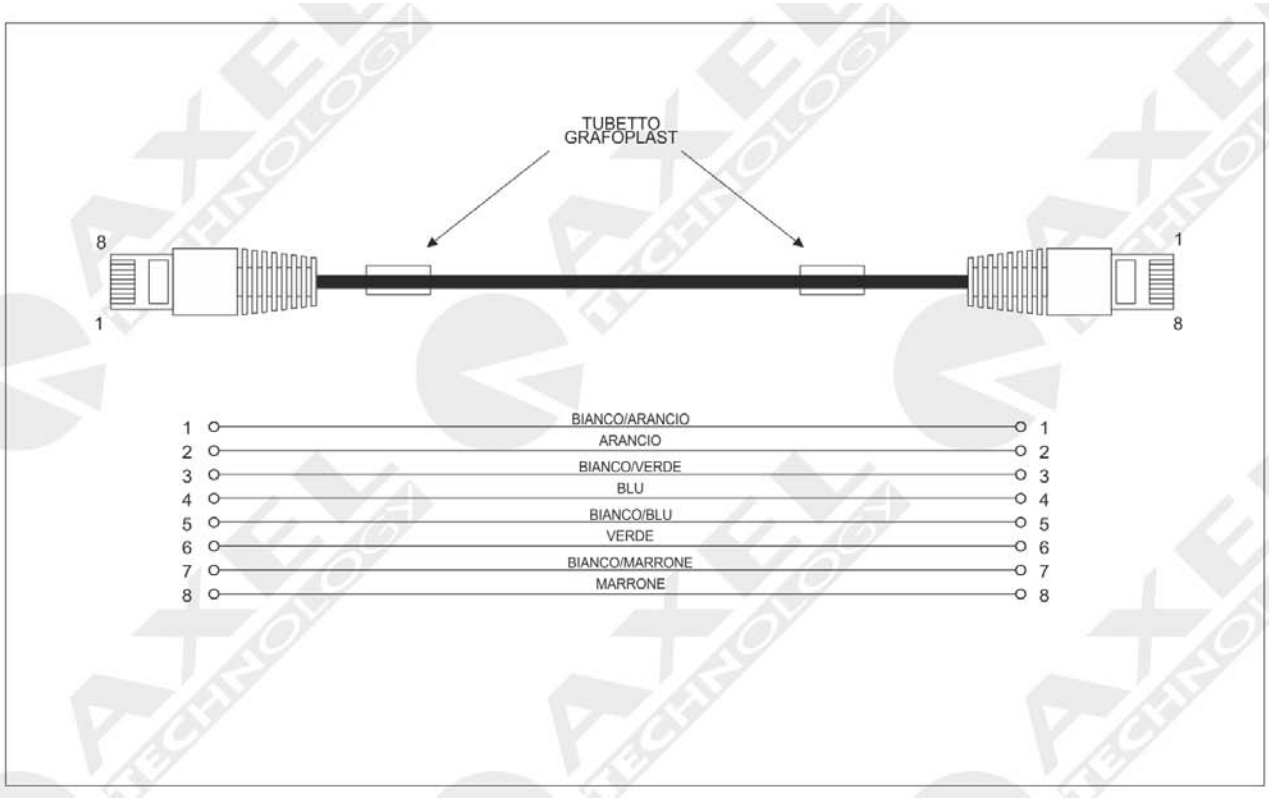
19.2 APPENDIX B –RS232 SERIAL CONNECTION E PINOUT

PORT 1		PORT 2,3,4	
2	Tx	2	Tx
3	Rx	3	Rx
4	DTR	4	/
5	GND	5	GND

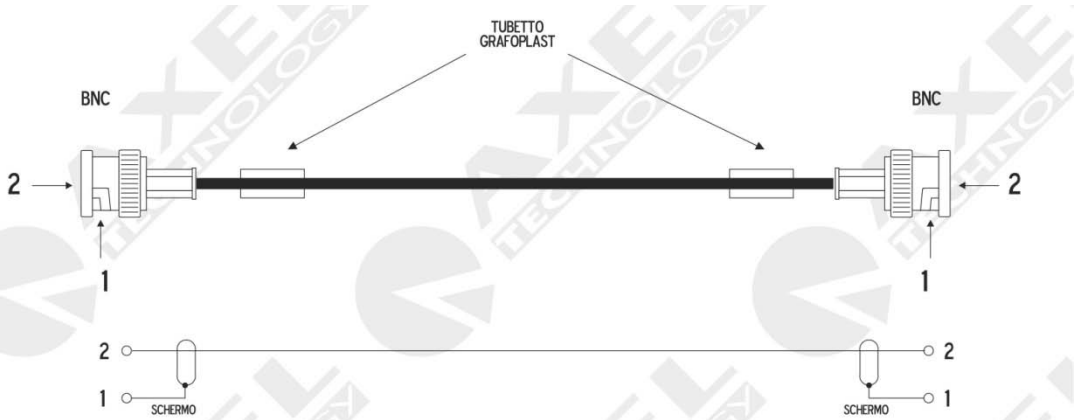


A standard Pin-to-Pin serial cable is required for the PC connection, not a CROSSOVER one. For a correct connection the cable must not be more than 20 m long. Ports 2 and 3 use only the Tx, Rx and GND for the PC connection while port 1 also has the DTR (Data Terminal Ready) for modem connection. The port connection speed must coincide with the speed of the port of the Falcon Three TV SDI and of the PC's serial port.

19.3 CONNESSSIONI ETHERNET / LAN

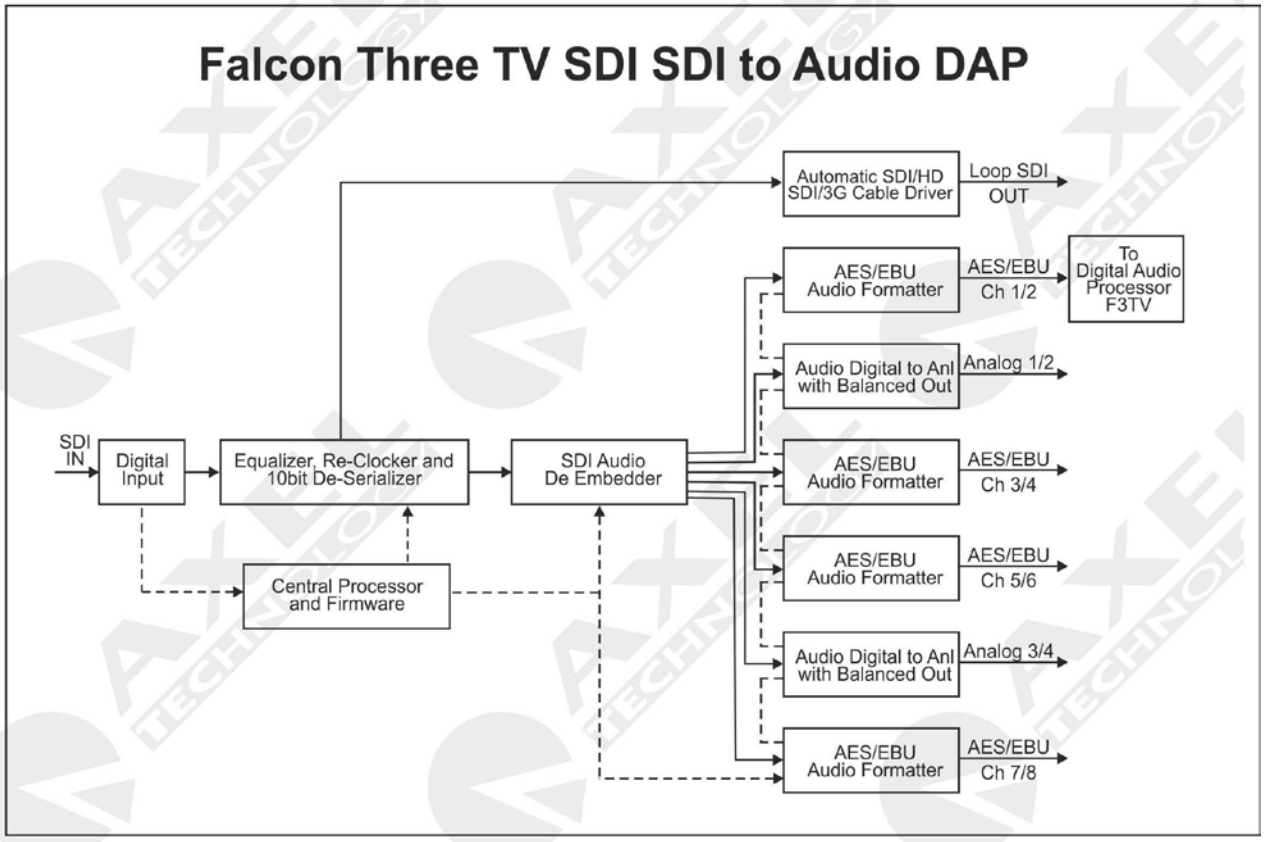


19.4 CONNESSIONE BNC – BNC (JUMPER CABLE)

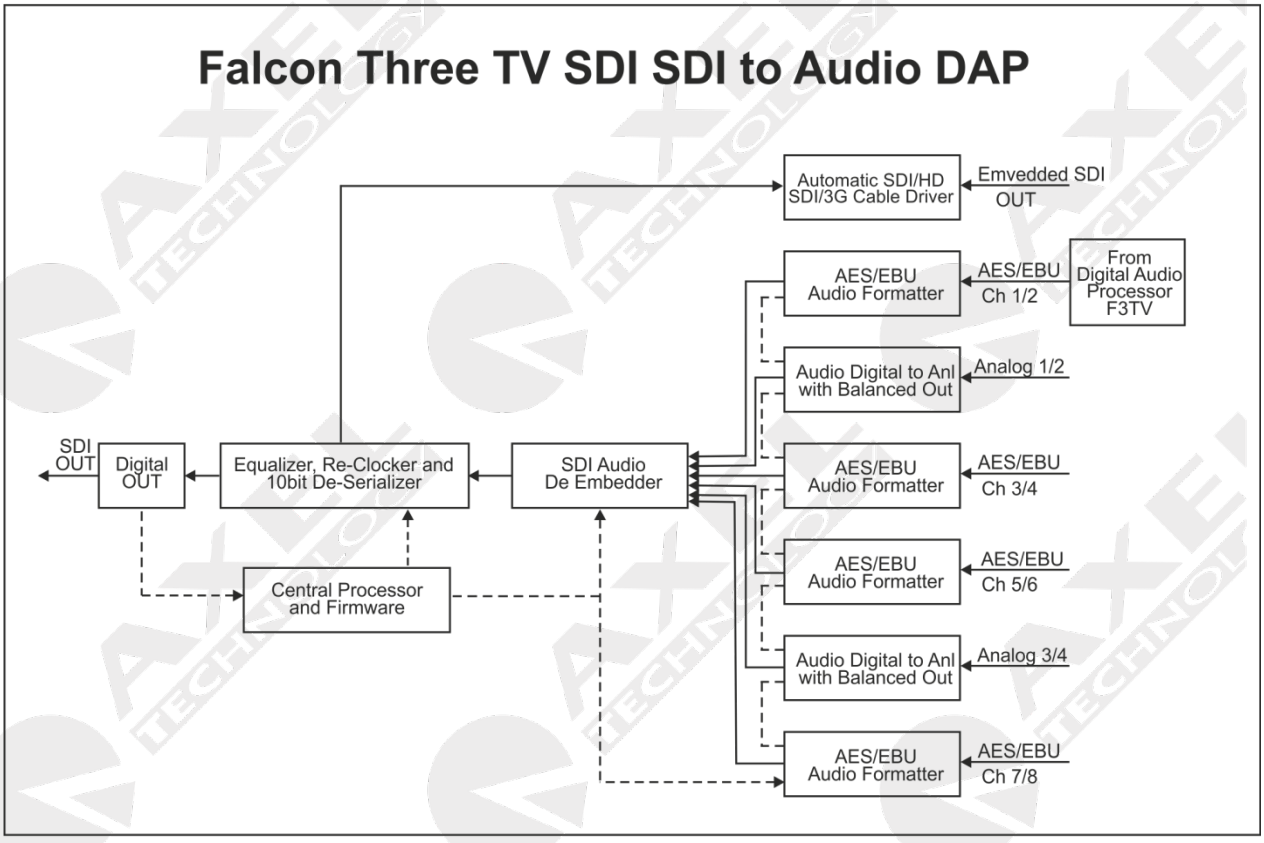


CABLE		BNC M - BNC M	
MATERIAL		Cavo RG58 + 2 GRAFOPLAST 2 BNC M + 2 calottaBNC	
NOTE			
DATE	26-11-04	CODE	013

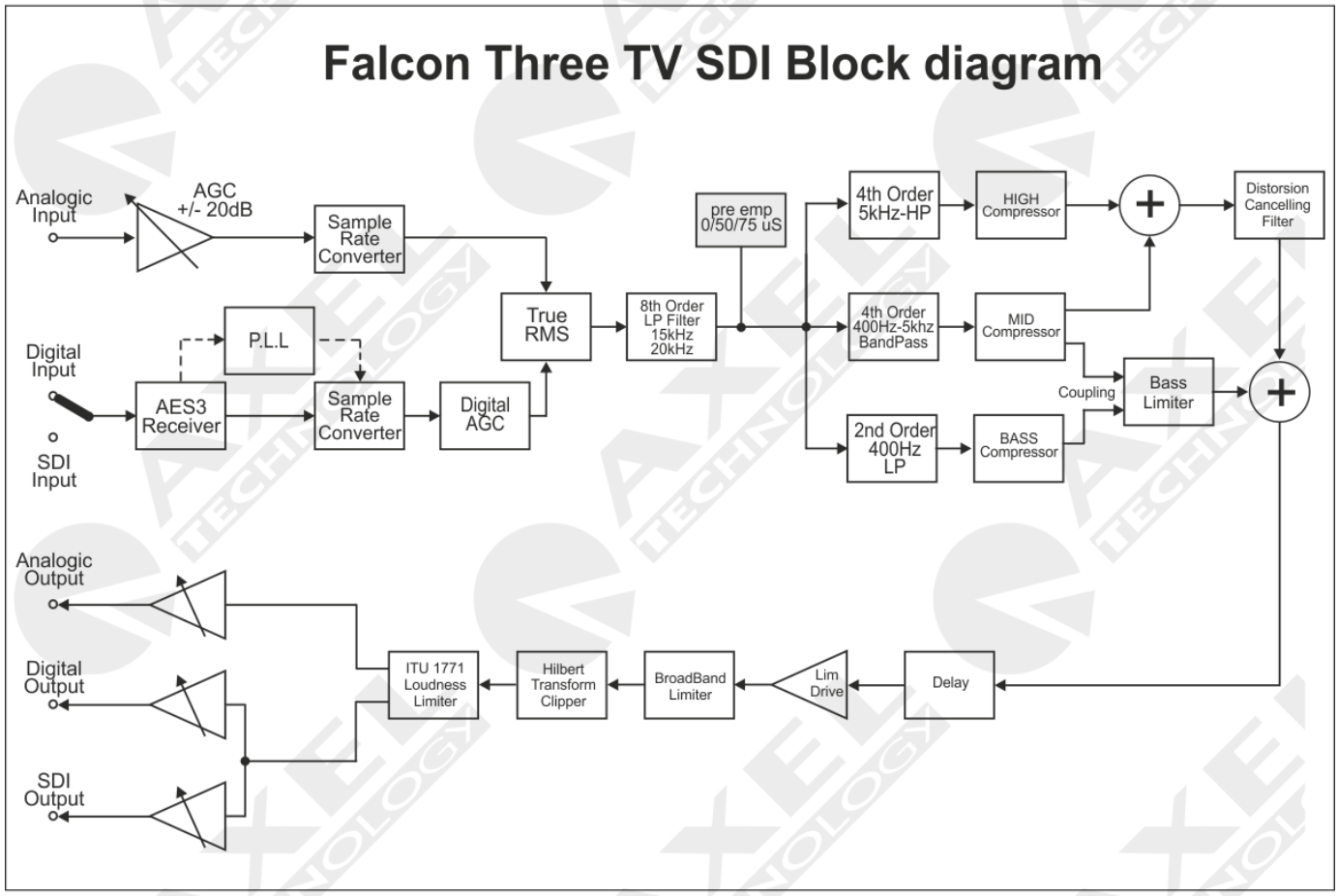
19.5 AUDIO DE-EMBEDDER SDI MODULE



19.6 AUDIO EMBEDDER SDI MODULE



20 FALCON THREE TV SDI BLOCK DIAGRAM



21 APPENDIX C - FIRMWARE UPGRADE PROCEDURE

The Falcon Three TV SDI comes from the factory with the most recent firmware installed just prior to shipping. When required, the firmware can be updated with the latest available version.

In order to upgrade the Falcon Three TV SDI processor, please follow this procedure:

FW Upgrade can be performed on Windows environment. The Operative System supported are: Windows Xp sp3, Windows Vista and Windows 7 Ultimate 32bit. Please be sure that ".net Framework 4" has been installed on your Pc. In case it is not installed, please check www.microsoft.com for the latest release.

After an initialization of the device (firmware upgrade), all user presets and adjustments may be erased and/or overwritten by the new factory setup! Please save the current configuration by means of the Configuration Editor tool prior to proceeding with the firmware upgrade.

When upgrading the firmware, do not forget to install the new associated software version of PC remote control. There is a direct correspondence between the firmware and software versions.

For example, the rel. 3.0 of Pc software requires the firmware version 3.0 installed on the unit and vice versa. More precisely, the two first digits must match, as possible sub-releases (identified by the third digit) are not involved in the firmware/software compatibility.

As general rule, software version *X.Y.Z* runs with firmware version *X.Y.K*

21.1 MAKING THE UNIT READY FOR UPGRADING

A) Shut off the unit

B) Set the switch on the front panel to **ON** (right position) (see highlighted switch in the picture).

C) Connect the Falcon Three TV SDI front or back **SERIAL PORT 1** to that of the Host PC. Please insert (or remove) the serial connector only with processor turned off. A regular (i.e. not crossed) cable is required, see the Appendix A.

D) Turn the unit on.

E) **Make sure ALARM Led on the front panel blinks (front panel display will be empty)**

21.2 PC OPERATION

F) Close all opened applications on the PC**.**

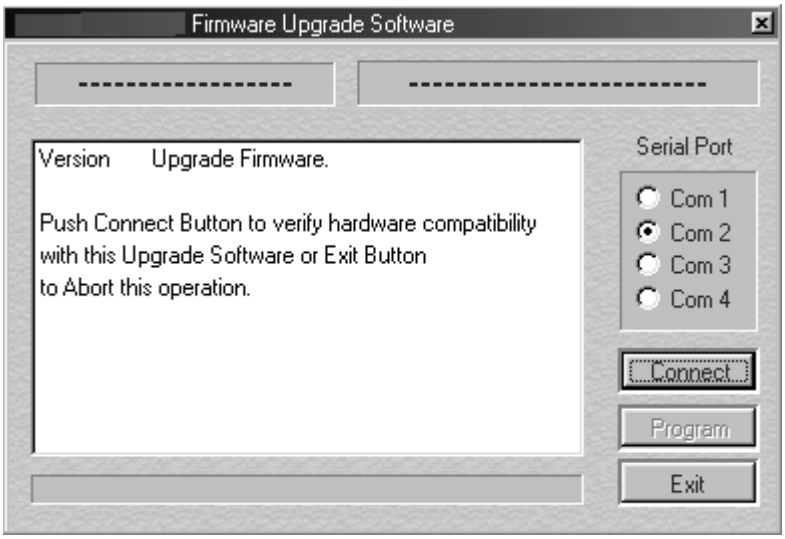
G) Access the **Fw UpGrades** folder

H) Double click the **file associated to the desired upgrade:**

a. **FTHREETV-SDI** if unit features **also the SDI** module.

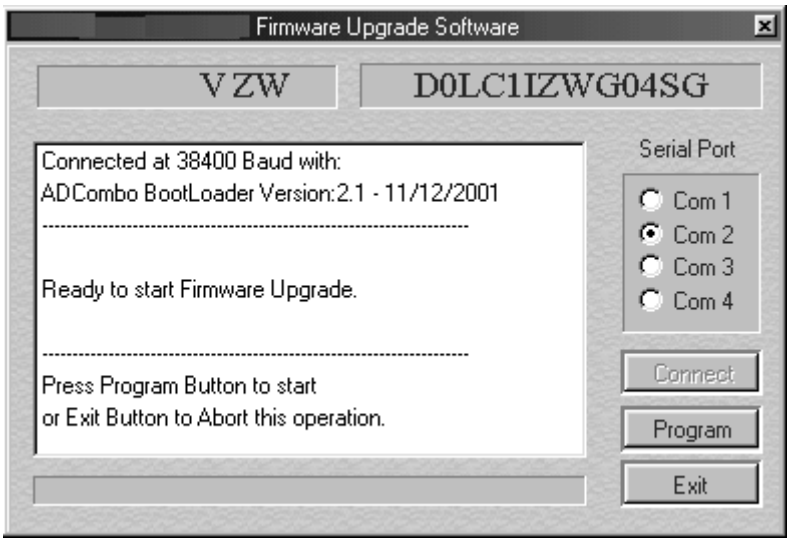
***NB** to make sure of current version of Yr Falcon Three TV SDI, please enter the Firmware Version page from the System Information menu.*

The following screen will be displayed:



I) Select the **PC serial port** on the screen

J) Click ***Connect*** button.



K) Make sure the Identification is correctly done (*Ready to start Firmware Upgrade* message + firmware code displayed in the right field), and click '**Program'** button**.** The upgrade will continue automatically.

L) Once you have completed the upgrade procedure, shut off the unit.

M) Move the **switch** back to the previous position

N) Turn the coder back on.

22 FALCON THREE TV SDI SPECIFICATIONS

GENERAL	*SPECIFICATION*
Dimension	1 rack unit, 352 x 483 x 44 mm
AC Rate	230 Vac 50 Hz / 115 Vac 60 Hz ±10%
Type of Power Supply	Transformer- based
Processing Architecture	Fully digital. Based on DSP 24bit/100Mhz. Signal processing is performed by phase linear filters.
Operating Temp. Range	- 5 to + 50 °C
AUDIO PROCESSOR	
SYSTEM PERFORMANCE	
Frequency Response	30 Hz - 20 kHz (-0.1 dB) - Analog Processing Chain
Sample Rate	Depending on processing being performed, from 47.5 to 760 KHz
Total System Distortion	0.008% - (0.005% @ 1 KHz)
Output Noise	The Falcon Three TV / Falcon Three TV SDI noise floor, in bypass mode, is primarily governed by the dynamic range of CS8420 digital rate converter, which has a specified Dynamic Range of 126 dB
Stereo CrossTalk	>-80 dB (from 30 Hz to 20 KHz)
PROCESS ARCHITECTURE	
Min. Processing Delay	as low as technically possible: max 4 msec for all processing curves
Number of Presets	10 Factory Presets + 1 User Presets
Preset Memory type	Non volatile memory, factory presets protected against accidental deletion
3-BAND PROCESS	
Falcon Three TV SDI	Audio Agc Mode, Agc Speed, ITU BS.1770
Falcon Three TV SDI Preprocess	Loudness Control, Loudness Reference, Output Delay
Falcon Three TV SDI Process	Band1 Compressor, Band2 Compressor, Band3 Compressor, Compressor Release, Band Coupling, Limiter Drive
ANALOG INPUT MODULES	
A/D Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)
Connectors:	XLR, female - Electronically balanced
AD Clipping Point	+20.0 dBu
Operative Nominal Level:	From –12.0dBu to +12.0dBu (0.1dBu Step)
Impedance	600 Ω / 50 kΩ (Electronically bal -selectable) EMI –suppressed
AD Dynamic Range:	104 dB RMS (108dB A weighted)
Input Modes:	Stereo, Mono L+R, Mono L
Distorsion:	less than 0.01% TDH+NOISE (0.0dBu 1kHz)
DIGITAL INPUT MODULES	
Connectors:	XLR female
Format:	AES3/EBU.
Impedance:	110 Ω
Sample Rates:	32 kHz / 44.1 kHz / 48 kHz / 64 kHz / 88.2 kHz / 96 kHz with automatic selection and jitter correction.
Operative Nominal Level:	From 0.0dBFs to –24dBFs (0.1dBu Step)
Dynamic Range:	125dB (Typ), 122dB (Min)
Input Modes:	Stereo, Mono L+R, Mono L
Distorsion:	Less than 0.001% TDH+NOISE (-10dBFs @ 1Khz)
ANALOG OUTPUT MODULE	
D/A Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)
Connectors	XLR, male - Electronically balanced
Output Level	-12.0 dBu to +14.0dBu (0.1dBu Step) – Max (+19dBu)
Impedance Source	10 Ω
Load Impendance	600 Ω or greater
Distorsion	Less than 0.01% TDH+NOISE (0.0dBu 1Khz)
Group Delay	3 ms
D/A Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)

Connectors	XLR, male - Electronically balanced
Output Level	-12.0 dBu to +14.0dBu (0.1dBu Step) – Max (+19dBu)
DIGITAL OUTPUT MODULE	
Connectors:	XLR male
Formats:	AES3/EBU
Impedance:	110 Ω
Sample Rates	32 kHz / 44.1 kHz / 48 kHz / 64 kHz / 88.2 kHz / 96 kHz (Internal)
Output Level	From 0.0 dBFs To –24.0dBFs (0.1dBFs Step).
Distorsion	less than 0.002% TDH+NOISE (-10 dBFs @ 1kHz)
Group Delay	3 ms
SDI TECHNICAL SPECS	
SDI Video Input	Switchable between SD, HD and 3 Gb/s SDI.
SDI Video Outputs	Automatically matches the SD, HD and 3 Gb/s SDI video input.
Multi Rate Support	Auto detection of HD or standard definition SDI inputs.
SDI Format Support	625/25 PAL, 525/29.97 NTSC, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60.
SDI Compliance	SMPTE 259M, SMPTE 292M, SMPTE 296M, ITU-R BT.656, ITU-R BT.601 and SMPTE 297M for Optical Fiber SDI.
Re-clocking	Yes
SDI Video Sampling	4:2:2
SDI Video Rates	SDI video connections are switchable between standard definition and high definition.
SDI Color Precision	4:2:2
SDI Color Space	YUV
SDI Audio Sampling	Television standard sample rate of 48 kHz and 24 bit.
SDI Auto Switching	Automatically selects between SD SDI, HD-SDI and 3 Gb/s SDI.
REMOTE CONTROLS	
Serial Ports RS-232	3x RS232 SubD 9p optically decoupled (default 38400 Baud)
Ethernet / LAN	10-100Mbits Ethernet Interface (opt)

23 WEEE Directive – Informativa RAEE

11In line with EU Directive 2002/96/EC for waste electrical and electronic equipment (WEEE), this electrical product must not be disposed of as unsorted municipal waste. Please dispose of this product by returning it to the point of sale or to your local municipal collection point for recycling.

In Übereinstimmung mit der Richtlinie 2002/96/EG des Europäischen Parlaments und des Rates über Elektro- und Elektronik-Altgeräte (WEEE) darf dieses Elektrogerät nicht im normalen Hausmüll oder dem Gelben Sack entsorgt werden. Wenn Sie dieses Produkt entsorgen möchten, bringen Sie es bitte zur Verkaufsstelle zurück oder zum Recycling-Sammelpunkt Ihrer Gemeinde.

Conformément à la Directive 2002/96/EC sur les déchets d'équipements électriques et électroniques (DEEE), ce produit électrique ne doit en aucun cas être mis au rebut sous forme de déchet municipal non trié. Veuillez vous débarrasser de ce produit en le renvoyant à son point de vente ou au point de ramassage local dans votre municipalité, à des fins de recyclage.

In navolging van richtlijn 2002/96/EG van het Europees Parlement en de Raad betreffende afgedankte elektrische en elektronische apparatuur (AEEA) mag dit elektrische product niet als ongescheiden huisvuil worden weggedaan. Breng dit product terug naar de plaats van aankoop of naar het gemeentelijke afvalinzamelingspunt voor recycling.

In ottemperanza alla Direttiva UE 2002/96/EC sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE), questo prodotto elettrico non deve essere smaltito come rifiuto municipale misto. Si prega di smaltire il prodotto riportandolo al punto vendita o al punto di raccolta municipale locale per un opportuno riciclaggio.

De conformidad con la Directiva 2002/96/CE de la UE sobre residuos de aparatos eléctricos y electrónicos (RAEE), este producto eléctrico no puede desecharse con el resto de residuos no clasificados. Deshágase de este producto devolviéndolo al punto de venta o a un punto de recogida municipal para su reciclaje.

I henhold til EU-direktiv 2002/96/EF om affald af elektrisk og elektronisk udstyr (WEEE) må dette udstyr ikke bortskaffes som usorteret husholdningsaffald. Bortskaf dette produkt ved at returnere det til salgsstedet eller til det lokale indsamlingssted, så det kan genbruges.

I linje med EU-direktiv 2002/96/EG om avfall som utgörs av eller innehåller elektriska eller elektroniska produkter (WEEE) får denna elektriska produkt inte bortskaffas som osorterat kommunalt avfall. Bortskaffa den i stället genom att lämna in den på försäljningsstället eller din lokala återvinningsstation.

EU:n sähkö- ja elektroniikkalaiteromudirektiivin (2002/96/EY) mukaisesti tätä elektroniikkalaitetta ei saa laittaa lajittelemattoman yhdyskuntajätteen sekaan. Hävitä laite palauttamalla se ostopaikkaan tai viemällä se elektroniikkaromun keräyspisteeseen.

De acordo com a Directiva Europeia 2002/96/EC sobre resíduos sólidos de equipamento eléctrico e electrónico (WEEE), este produto eléctrico não pode ser deitado fora juntamente com o lixo municipal indiferenciado. Por favor, no final da vida útil deste produto, devolva-o ao estabelecimento de aquisição, ou entregueo no local de recolha apropriado para reciclagem designado pelo seu município.

V souladu se smrnicí EU . 2002/96/ES o odpadních elektrických a elektronických zaYízeních (OEEZ) se tento elektrický výrobek nesmí likvidovat jako netYídný komunální odpad. PYi likvidaci tento výrobek vrat'te prodejci nebo ho odevzdejte k recyklaci do komunálního sbrného zaYízení.

Vastavalt EL direktiivile 2002/96/EÜ, mis käsitleb elektri- ja elektroonikaseadmete jäätmeid (WEEE), ei või antud toodet visata majapidamisjäätmete hulka. Palun tagastage antud toode taaskasutamise eesmärgil müügipunkti või kohaliku piirkonna jäätmekogumise punkti.

V súlade so smernicou 2002/96/ES o odpade z elekrických a elektronických zariadení (OEEZ) sa toto elektrické zariadenie nesmie odstranovat' ako netriedený komunálny odpad. Výrobok odstránte jeho vrátením v mieste nákupu alebo odovzdaním v miestnom zbernom zariadení na recyklovanie.

24 GUARANTEE

The product is covered by a one year guarantee ex-works by the manufacturer.
Do not open the device. The guarantee shall not be valid if the guarantee seals are broken.
The manufacturer shall not be liable for damages of any type deriving from or in relation to the incorrect use of the product.

25 DECLARATION OF ROHS CONFORMITY

To minimize the environmental impact and take more responsibility to the earth we live, in accordance with European Union Directive 2002/95/EC, known commonly as RoHS (*Restriction of Hazardous Substances*),

We herewith declare,

Axel Technology srl
Via Caduti di Sabbiuno 6/F
40011 Anzola Emilia – Bologna - Italy

that the product listed below complies with the requirements of Directive 2002/95/EC, Article 4, paragraph 1 with reference to hazardous chemical substances:

Lead (Pb)
Hexavalent Chromium (CrVI)
Mercury (Hg)
PBB (Flame Retardant)
PBDE (Flame Retardant)
Cadmium (Cd)

Product Description: **FALCON THREE TV SDI**

RoHS 2002/95/EC

Authorized Company Representative:	Title of Signatory:	Date:
	Christian Sighinolfi – Technical Manager	28 December 2010

26 AXEL TECHNOLOGY CONTACTS

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